RAILROAD GAZETTE

FRIDAY, JUNE 17, 1881.

Attachments to Locomotive Boilers.

[A paper read by M. N. Forney, before the American Railway Master Mechanics' Association, at its meeting in Providence, R. I., June, 1881.]

During the last year or two my attention has been attracted to that class of accidents which occur on railroads in which a great part of the injury to persons is due to the escape of steam from locomotive boilers. This is due nearly always to the knocking off of some of the numerous attachments which must be used in connection with such boilers, as it rarely happens that the boiler itself is perforated in any way when a collision occurs. To show the terrible effects of such accidents, the following account of some which have occurred during last year and this has been collected from the reports of Train Accidents in the *Railroad Gazette*, and from other sources.

"On Aug. 5 a freight train on the New London & Northern Railroad ran into the rear end of a passenger train, which had stopped at Thames Grove, Conn. The rear car was broken in and the boiler of the freight engine was damaged so that steam escaped into the wrecked car, scalding a number of people. Ten persons were hurt, three of them seriously."

"On Aug. 18 a freight train on the Pittsburgh, Cincinnati & St. Louis was broken in two near Crown Point, Ind., and the detached cars ran back down grade and into the head of a following freight. The caboose was forced up on the second engine, breaking the steam pipes so that steam rushed out, scalding the conductor, brakeman and four drovers, who were in the caboose, so that three of them died soon after. The engineer was also hurt."

"On Aug. 11 the second section of a crowded excursion train on the West Jersey & Atlantic road ran into the rear of the first section which was slowly pulling into a siding at May's Landing, N. J., where an express tram was to be met. The engine of the second section went completely through the rear car of the first, wrecking it badly, scattering the passengers in every direction. The cylinder heads were broken and the car was filled with steam, scalding many of the unfortunate passengers. The number reported killed at once or since dead from injuries is 28, and 47 others were more or less hurt."

From other sources of information it has been learned that the escape of steam in this case was due to the breaking of the T-pipe in the smoke-box to which the steam pipes were attached.

"On Oct. 9, near midnight, an extra passenger train on the Pennsylvania road ran into the rear of a preceding passenger train which had been stopped by a block signal at Twenty-eighth street, in Pittsburgh. Both trains were crowded with people. The engine of the second train cut its way into the rear passenger car, throwing the people in every direction. There were 32 persons killed or hurt so that they have since died, and 17 were less severely hurt."

The writer had an opportunity of examining the engine which ran into the preceding train soon after the accident. A great part of the fatality was due to the breaking or knocking off of one of the check-valve cases, which allowed the steam to escape into the car. Had this not occurred, comparatively few persons would have been killed.

"On Oct. 20 a passenger train on the Cincinnati, Hamilton & Dayton road ran into the rear of a preceding passenger train, which was just going into a siding at Jones Station, O. The second train crushed into the rear car of the first, breaking it up badly, and the steam escaped into the car, scalding the passengers who were unable to get out. Fifteen persons were hurt, of whom three afterward died."

In this case, too, the writer had an opportunity to examine the engine soon after the accident, of which he then wrote the following account:

"An officer of the road stated that the engine ran under the floor of the car so that the latter was on top of the boiler. The dome, which was over the fire-box, however, crushed in the end of the car so that the latter was about over the foot-board. In doing so the injector-valve—a common globe-valve back of the dome—was broken off, and from this the steam escaped into the car. Most of the passengers were thrown to the front end, and as the steam escaped into the back end the injury from scalding was not nearly so great as at Pittsburgh. In the latter accident it was hot water that escaped from an opening about 2¼ in. diameter; whereas, on the Cincinnati, Hamilton & Dayton engine it was steam which escaped and not water, and the opening was only about 1¼ in. diameter. The neck of one of the check-valve cases, to which the feed-pipe was attached, was broken off, but the check-valve was left intact. The flange of the case, by which it was bolted to the boiler, was, however, loosened and, doubtless, leaked; but as this was below the floor of the car after the accident happened, probably it did but little damage."

"On Feb. 22, of this year, the regular train was just leaving President, a station on the River Division of the Buffalo, Pittsburgh & Western Railroad, near Oil City, when a special, running at the rate of 40 miles an hour, plunged into it from behind. The rear passenger coach on the regular train was badly wrecked, and aside from bodily injuries, many of the passengers were badly scalded by the escaping steam from the locomotive, which almost immediately filled the coach. Five passengers were badly, one it was supposed fatally, and nine slightly, hurt."

No attempt will be made to describe the human suffering which resulted from these six accidents, which have occurred in less than a year and a half, and in which 79 persons were killed and 83 injured. The sufferings of many of those who were not instantly killed must have been of the most excruciating character. No torture could produce more agony than some of the victims must have suffered. It is not with any intention of giving a dramatic interest to this paper that the following accounts which have appeared in the daily press are also recounted, but to make those in charge of the construction and operation of locomotives realize as vividly as possible the suffering which is often caused by accidents of the kind described, part of which it is in their power to prevent.

An accident happened on the Second Avenue Elevated road on Oct. 11 of last year in which a train ran into one in front, and the account says: "The fireman was slightly scalded; the engineer was badly scalded and thrown 30 ft. down into the street below, being hurt so badly that he died in an hour."

On Nov. 16, as a train was approaching Wilkesbarre, Pa., and had just crossed a bridge, the locomotive jumped the track and dragged a passenger car with it down a steep embankment. The daily papers reported that: "McMahon, a flagman, who was signaling for a coal train, and had stepped aside to let the train pass, was struck by the engine and had his head severed from his body. John Sweeny, the fireman, was caught in the wreck and was fatally scalded. Henry Murphy, a brakeman, was struck by the engine and had his collar bone broken, and he, too, was horribly scalded. Patrick Manaman, another brakeman, was injured internally and badly scalded. The shriek of the injured lying under the engine, which was emitting dense clouds of steam, was appalling. Women fainted, and strong men shook nervously as they stood unable to help the poor sufferers."

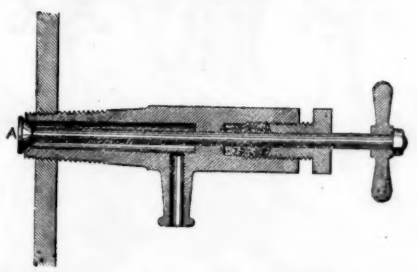
In this case the immediate cause of the escape of steam was that the engine struck a tree, which raked everything but the dome from the top of the boiler.

On Nov. 27 an express train on the Pittsburgh Division of the Baltimore & Ohio Railroad, while rounding the precipitous curve, known as Baughman's Bend and Smoky Hollow, about 30 miles west of Cumberland, was thrown down an embankment from 80 to 90 ft. high. The report in the papers said; "The fireman, Jacob Rowth, was caught under the engine, and after suffering indescribable torture from scalding, for the space of three hours, in which his cries and groans were heartrending, finally died; the passengers, although willing, being unable to relieve him from his terrible fate. The engineer, Peter Briney, was badly, and it is feared fatally scalded by the escaping steam."

On May 21, of this year, the Chicago bound train in what is called the "Kankakee Line" of the Cincinnati, Indianapolis, St. Louis & Chicago road, when near Templeton, Ind., was thrown from the track by a drove of cattle. The papers said of this accident: "The engineer reversed the lever, and saved his life by jumping, but the fireman was caught under the water-tank of the engine and pinned to the ground. His screams for help, as he was slowly roasted to death, were agonizing. It was over two hours before the poor fellow could be extricated from his horrible position. His vitals and limbs were all roasted and scalded."

On May 24 a wild-cat engine ran into locomotive drawing a passenger and freight train on the Chatham & Hudson Branch of the Boston & Albany Railroad at Ghent, N. Y. The Chatham *Courier*, in its report of this accident, said:

"Robert Best, engineer of the passenger train, and Charles H. Deweese, his fireman, were instantly killed. The cab of their engine was reduced to matchwood by the tender. The sides of the tender mounted on the boiler and closed around the unfortunate men, who were turned by the shock with their backs to the head of the boiler, against which they were tightly jammed by the débris of the tender and the contents of the first coal car. Deweese stood with arms and face uplifted to the sky. Beside him, but lower down in the hole, was the body of Best. Only his head and breast were



visible. His back was broken and crushed. His uplifted left arm was broken in several places. The lower portion of his body was horribly mutilated, and one of the gauge cocks was driven into his side."

It was said by some of those who first saw the body of Best that steam from the gauge-cock, which entered his side, was escaping from his mouth. The horror of this is mitigated only by the fact that both men, it is reported, were instantly killed.

The experience of Master Mechanics could, no doubt, largely increase the ghastly and terrible list of such accidents, and the sickening details which attend them. But it was not my purpose in writing this paper to make it only a recital of appalling accidents and of the pain and torture which attend them, but to lead you to consider some means of preventing or diminishing some of the sufferings produced by such disasters.

Your experience will probably agree with my observation, that it is comparatively rare that the plates of a locomotive boiler are perforated in a collision. The escape of steam is nearly always due to the breaking or knocking off of some of the attachments to the boiler, which thus leaves an opening from which the steam or hot water escapes. Perhaps few of you will realize how many such attachments there are on an ordinary locomotive until you see them enumerated. The following list includes all that are generally used:

1	T-pipe	1 opening.
2	Check-valves	2 "
2	Safety-valves	2 "
1	Whistle	1 "
1	Throttle-valve stem	1 "
2	Injector-valves	2 "
2	Blow-off cocks	2 "
4	Gauge-cocks	4 "
1	Glass water-gauge	2 "
1	Blower-valve	1 "
1	Throttle for air-pump	1 "
1	Steam-gauge cock	1 "
2	Cylinder oiling-cocks	2 "
1	Surface cock	1 "
	Total	23 openings.

Any of these is liable to be broken off in case of a collision. Besides these there are a number of hand-holes and a dozen or two of studs which are screwed into the boiler for various purposes. In case of accident the studs generally break outside of the boiler, and thus leave the holes plugged up. The hand-hole plugs or covers are not much exposed, and are not liable to be injured so as to allow steam to escape; but as every locomotive runner knows, any one of the other parts is liable to be broken when an accident happens to the locomotive.

The problem which presents itself to master mechanics, and those who design locomotives, is how to make these parts more secure and less liable to injury by collision, or when an engine runs off the track. To do this in the most perfect manner will of course require the exercise of a great deal of ingenuity and constructive skill. There are, though, some means which suggest themselves which would materially lessen the risk of injury to some of these parts, or which would supply a safeguard to prevent the escape of steam if they were injured.

In the case of the accident at May's Landing, the engine had, we think, although not quite certain of it, an old-fashioned throttle valve in the T pipe. Of course when the latter was broken the steam escaped, no matter whether the throttle was closed or not. Generally a locomotive runner will close the throttle before an accident occurs, especially in case of a collision, when he sees the train in front of him. If the throttle valve is in the dome, the plan now generally adopted, the steam would not escape, even if the T pipe was broken, unless at the same time the dry-pipe on the inside of the boiler was displaced. The inference from this is, or should be, that the old plan should be abandoned and the throttle valve should be placed in the dome. If steam is not shut off in case of a collision, it is hard to see how to guard against what happened at May's Landing. Nevertheless it is a problem on which inventive skill may, perhaps, be profitably exercised.

The position in which check-valves for injectors are now placed is a case of the survival of a habit when the reason for it has passed away. When pumps were the only means of feeding boilers, and they were worked from the cross-head, the check-valves were quite naturally placed as near to them as they could be, and at the same time deliver the water near to the front ends of the tubes, which is generally considered desirable. When injectors are used, however, the conditions are quite different. They should be as near to the locomotive runner as possible, and therefore if the water is delivered into the boiler through the check-valve, in its old position, the two must be connected by a long pipe which is liable to injury and is exposed to cold, so that the water in it is apt to be frozen when the injector is not working. It has therefore been proposed that instead of placing the check-valves in the old position near the front end of the boiler they should be attached to the back end of the fire-box in immediate proximity to the injectors, and that the water should be conducted to the front end by a pipe on the inside of the boiler. To do this, the form of injectors would require to be changed so as to stand vertically instead of horizontally. Doubtless, the manufacturers of these instruments would soon do this if the change was demanded. Such an arrangement would eliminate altogether the danger of injury from the immediate cause which produced such terrible results in the Pittsburgh accident. It may be said, however, that while the danger of this kind of accident would be removed, the check-valves, if attached to the back end of the boiler, would still be exposed to injury in a collision or derailment, and especially, as often happens, if the tender mounted up over the foot-board, thus exposing the locomotive runner and fireman to greater risk. This suggests the problem of making a check-valve which would not be exposed to such danger. In the ordinary form of construction the valve is held in a case which is attached to the boiler by a more or less slender neck. A severe blow or concussion breaks the case off at the neck and carries the valve with it. It would not seem an impossible nor even a very difficult task to make a check valve and case which would be so arranged as to be on the inside of the boiler and yet be so attached that it could be easily removed from the outside when the valve required cleaning or grinding. The injector pipe would then be attached by a neck to the valve case, and thus in the event of its being broken off the valve would be left intact. The inventors and manufacturers of injectors have shown so much ingenuity and skill in perfecting these instruments that they would probably have little difficulty in working out a plan which would fulfill the conditions which have been described. It would probably be very much to their advantage to do so, and in the event of its being a source of profit to them a liberal commission will be expected by the author of this paper.

The check-valves are, however, only *one* source of the danger pointed out. There still remain about twenty cocks of various kinds which usually are each attached separately to the boiler, any one of which if broken off would allow enough steam to escape to scald a whole car-full of people. What shall be done with these? In some cases a half-dozen or more of them are attached to a stand which is connected with the boiler by a single opening. This diminishes the danger by concentrating these parts in a smaller space, and thus lessening their liability of injury. But it is evident that if any one of the cocks attached to a stand of this kind is knocked off, it would allow steam to escape the same as though it was attached directly to the boiler. This plan therefore lessens only to a slight degree the danger from this source, although there are other advantages in using such stands. There are besides other parts, such as safety-valves, whistles, gauge-cocks, etc., which cannot be attached to a stand of this kind. What shall be done with them to make them safer?

In the *Railroad Gazette* of Nov. 5 of last year, some discussion and suggestions on the subject of this paper were published. In response thereto a correspondent, Mr. S. D. Webster, of St. Louis, wrote to the editor as follows:

"Let me suggest that a combination of the ordinary valve mechanism with the so-called Mississippi River gauge-cock valve, represented in the engraving herewith, may be advantageous if the number of perforations cannot be reduced. For the information of those who may not know what the last named is I will say that it is simply a button, *A*, in the end of a stem. It is pressed outward against the tube of brass in which it is contained by the steam. To try his gauge the engineer pushes the stem with a rod; when he withdraws the rod the valve closes. The reverse is the case with a locomotive gauge-cock. The turning of a screw withdraws the valve. My suggestion therefore amounts to this—let the valve (button) be larger than the orifice and on the inside of the boiler and *let the turning of the screw push it into the boiler*, the steam or water escaping around the stem. This will have the effect of leaving the perforations closed in more than half the cases you enumerate because the stem would break off if the part outside the boiler did so but the valve proper—the button—would still be held in place by pressure of steam."

This suggestion, it is thought, contains the germ or the key to the solution of the difficulty. Not only the gauge cocks but nearly all the other cocks and valves which are used in locomotives, open outward. If these were arranged so as to open inward they would provide a safeguard against the escape of steam if the outside projection is broken off. There are some difficulties in the way of using such a system, because, as every practical man knows, all the valves about locomotives frequently need refitting, and are liable to be clogged by foreign substances in the water. They must therefore be so arranged as to be easily removed and so that their seats will be accessible. This does not seem, however, to be an insurmountable difficulty, and what is needed is that the whole system of cocks and valves, which are attached to locomotive boilers, should be designed so as to open inward.

Some special difficulties may be encountered as in the case of safety valves, which must open outward, but a check might be designed to be attached to them which would be open when the valve was closed, but which would close after the valve had lifted more than the normal distance.

The design of some such system of boiler fittings is an inviting field for inventors, and a promising one to the manufacturers of such appliances. To them it is for the present left. If this paper will have the effect of directing their and your attention to this subject, and thus diminish the terrible suffering now so often inflicted and endured, the awful agony of which none but the victims can ever faintly even realize, and the very horror of which leads persons to avoid thinking of it, the purpose of the writer will be accomplished.

Stand for Locomotive Boiler Attachments.

Attention has been called in these pages before to the danger growing out of the great number of perforations and attachments used in connection with locomotive boilers, and a paper to be read before the Master Mechanics' Convention will be found on another page, in which this subject is discussed at some length. The amount of human suffering caused by the escape of steam in railroad accidents is appalling, and any device like the one illustrated herewith which will help to prevent or mitigate the effects of such accidents must commend itself to locomotive superintendents and managers of railroads.

Ordinarily the two heater-cocks, the two oil-cocks, for oiling the cylinders, the cock for the steam-gauge and the blower-valve are all screwed into the boiler in separate holes cut for the purpose. These have the effect, not only of weakening the shell of the boiler, but the parts named are scattered over so much area that they are very liable to injury in case of a collision or derailment.

The stand which is illustrated herewith is intended to provide the means of connecting these parts with the boiler without cutting a separate opening for each one. Fig. 1 is a perspective view of it, and figs. 2 and 3 elevations, and fig. 4 a side view, showing the method of attaching the oil pipes. The stand consists of a brass casting, which is screwed into the boiler by a suitable neck, which is clearly shown in figs. 2 and 3. The heater-pipes, the oil-cocks, the steam-gauge and its cock, and the blower-valve are all attached to the stand by lugs and bosses. The seats and cases for the two heater valves and the blower-valve form parts of the stand itself, and are cast with it. All these are clearly shown by the engravings, which show the construction so clearly that no further description of them is needed.

It will be seen that when this stand is used only one perforation of the boiler is needed, whereas, if the parts which are attached to the former were all used separately, as they ordinarily are, not less than six holes must be drilled into the boiler shell. Besides these there are often one or several studs used for holding the steam-gauge. In case of accident, as pointed out above, the liability of knocking off any of these parts, and thus allowing the steam to escape, is increased with their number, if each is screwed into a separate hole.

It may be said, however, that if this stand is used, and any one of the parts which are connected to it is broken, the steam will escape the same as it would if they were screwed directly into the boiler. While this is to some extent true, yet, owing to the compactness with which they are arranged on this stand, they are less exposed to injury than they would be otherwise.

Besides diminishing this danger, the stand provides a very neat and convenient means of attaching the steam gauge and the half dozen cocks and valves which are shown in the engravings. Its design is thoroughly practical, and it has also the artistic character which attaches itself to all good mechanism. It was designed and has been patented by Mr. F. D. Child, Superintendent of the Hinkley Locomotive Company of Boston.

It has been applied to a very considerable number of locomotives built at the works of this company, and is said to be giving entire satisfaction to those who use it. Any further information in relation to it may be obtained from Mr. Child, whose address is care of the Hinkley Locomotive Company, No. 439 Albany Street, Boston, Mass.

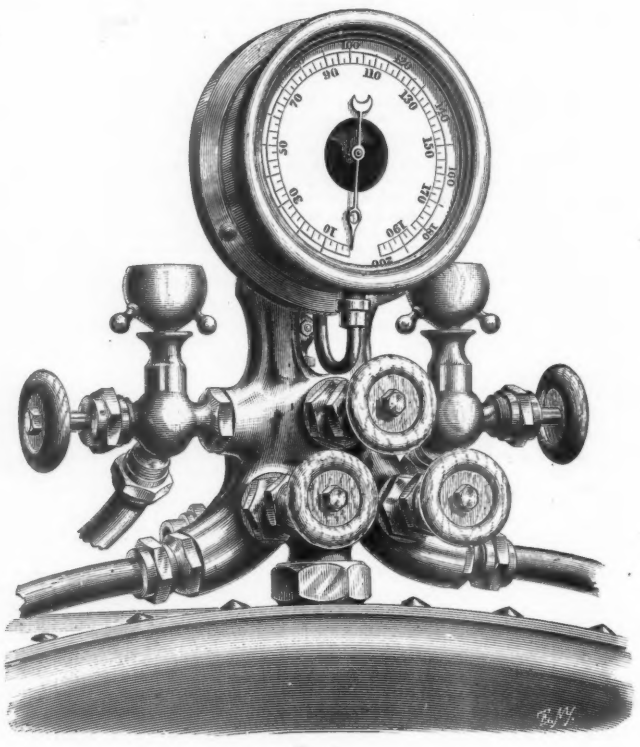


Fig. 1.

STAND FOR LOCOMOTIVE BOILER ATTACHMENTS.

Designed and patented by F. D. Child, Supt. Hinkley Locomotive Company.

Contributions.

Notes by the Way.

ST. LOUIS, MO., June 6, 1881.

TO THE EDITOR OF THE RAILROAD GAZETTE :

Although so many railroads run to St. Louis, there are several senses in which it is not a railroad centre. Few roads have their general offices here, and there are but few superintendents or master mechanics here stationed. This is not to be regretted, for in appearance, at least, it would be difficult to find a more unhealthy spot than East St. Louis; and if any men have inalienable rights to a healthy habitation, they are the officers and operators of railroads, with nerves strained to the extreme point of endurance, and with no surplus energy for an occasional hard "shake" or "spell" of fever.

The only large shops here are those of the Missouri Pacific in St. Louis proper, employing about four hundred men. No locomotive building is attempted, the full capacity of the shop being demanded by needful repairs to the engines already on the track, whose number is constantly increasing. The Baldwin Works have six new consolidation engines in hand for this road (having previously supplied fourteen); the Hinkley Works have recently sent four engines of the same class, and there are four yet to come, while the Rogers Works have just filled their order with the last two of four fast passenger engines.

The Superintendent of Motive Power, Mr. John Hewett, has embodied in the Consolidation engines built by the Hinkley Works certain simple but interesting changes, which he believes to be very favorable ones.

As is well known, the Mogul and the Consolidation types of engines carry a large portion of their weight on the driving-wheels, the "pony" truck allowing the forward drivers to come well to the front, and to bear a portion of the load which in the ten-wheel engine is carried on the truck. This forward position of the leading drivers, together with the impetus of the weight which they carry, and the curvature of the track, tends to increase greatly the friction of the flanges; and on roads with frequent curves the flanges of the forward drivers become so worn and thin that the engine men live in fear that the wheels may at any moment mount the track and leave them in the ditch.

To obviate this defect, Mr. Hewett has shortened the radial bars of the pony truck, and placed the centre-pin and the fulcrum of the equalizing lever (connecting the truck with the engine frame) together, at a point somewhat further forward than usual. In the Hinkley Consolidation engines this point is 40 in. from the centre line of the axle, or about 8 in. in advance of the usual position.

In writing to the Baldwin Works about the matter Mr. Hewett says:

"I have run one of these Hinkley locomotives around a 22 degree curve, and the flanges of forward tire did not strike the rail on outside of curve and the direction of truck wheels relieved their flanges so much that I am convinced of superior results both in economy of power around curves and wear and tear of flanges and axle boxes.

"On the 22 degree curve above referred to, the end centre of engine truck axle measured 1⅝ in. further from the cylinder-head on outside of curve and the same distance nearer the cylinder-head on the inside of curve than on a straight line. This position relieves the flanges of the drivers from grinding and forcing against the rail on the outside of curve.

"Will you please give this subject due consideration and give me your views?

"I am so well convinced of the benefit of this method that I am contemplating applying it to the 14 Consolidations built by you, and, if not too late, would like you to apply it to the six you are building."

CONSOLIDATION ENGINES AT THE WEST.

The use of consolidation engines in the West is causing considerable activity among engineers and bridgemen, as the weight of these engines requires a stronger bridge than is to be found on the average Western road. I have heard it suggested that what is needed is lighter engines of this type, the wear and tear of such ponderous weights on the track, and the inconvenience and even danger of trains of fifty to sixty cars unfitting these heavy engines for the lighter grades of Western roads, however well adapted to the East. The cabs of these engines, it has been suggested to me, by men on the road, could be made more comfortable by a ventilator in the top. Where the boiler fills so much of the cab, the runner's head, to say the least, is very apt to suffer from the accumulation of heat, and he should have every chance of keeping cool. Perhaps, however, he suffers less on the Consolidation than he would on the Wootten locomotive, from which the suggestion we have mentioned arose.

METALLIC PISTON PACKING.

The metallic piston packing used in the Missouri Pacific shops has already been described in the *Railroad Gazette*. It is considered here not only a great economy as packing, the head rings costing little, and even that little being largely saved by re-use of the lead; but a still greater success as a piston preservative, acting as it does as a self-fitting guide, and so keeping the piston in almost perfect condition. The stationary engine at the shops has been run with it since Sept. 28, 1879; a ring of lead was added on Oct. 10, and another on May 9 of last year, so long are the periods which this packing fills out. No rings are removed from about the piston until the engine is disabled, but one is added every six weeks or three months, or as may be needed.

The piston of an engine which had run 56,000 miles (we give the figures as reported by the foreman of the shop) with this packing was worn no more than a sixteenth of an inch.

MOVABLE POWER.

Nothing is more needed about a shop or round house than a movable power; and by far the best thing I have seen in this line is the Stow flexible shaft as used in these shops. A Westinghouse air-pump is fixed at one end of the building, with tubes to air faucets at various points; and to any one of these is attached a rubber hose connecting with a modified form of the Brotherhood engine.

This engine works the Stow shaft, which, being flexible, can be used in boring from any point or position. With sufficient tubing, this power can be carried any whither; and in this shop the easily movable power is carried to the heavy cylinder, wherever it may lie, and it is bored from any position desired, even from the inside of an old boiler, and through its old bolt-holes, if required.

These are but a few of the many things which interested me in this wide-awake shop. Here were tools to be found which I have seen no where else, and while all ornamental and unnecessary work is avoided, there is an evident attempt here to do exactly and correctly measured work, rather than to rely on mere touch and go instinct.

DAVENPORT, Iowa, June 10, 1881.

What the *Railroad Gazette* has aptly termed the "stock" of railroad men, the raw material from which they are made, has been to the writer a subject of peculiar interest. We should prefer the word "blood" in speaking of the native quality of men, as a more human word, and one which has gathered about itself something of the deep and sacred meaning which lies in all manhood; but whatever the term, there is an undoubted fact to be named: There is a vast inborn difference between men, a difference not merely of qualities, but of quality, and the West is perhaps the best spot on the globe to study this difference and its effects. Blood tells here, but it tells no gloomy story—while what a man gets from father and mother and grandmother comes out plainly, the law of progressive improvement under the influence of an active, aspiring life shows its power here as perhaps nowhere else. One sees two kinds of men: those who were born well and those who have done well, and it is not easy to say which has the advantage; of course we do not mean morally, for we are not now speaking of the personal elements of character.

The Chicago, Burlington & Quincy has perhaps the best blood in its ranks, and perhaps, too, it has exercised more care in selecting its men. Many of its young men are from Northern New York, and the influence of good schools is apparent.

The men on the Wabash system are less intelligent, but there is a wide-awake interest in their business, which we regret to say does not seem to exist on the Chicago, Milwaukee & St. Paul. The men on this road are worked quite too hard, and nowhere in the West is there more listlessness, and, I judge, want of professional interest than on some parts of this road. The men are well paid, but overworked. There are many young men on the Northwestern road, and there is good blood among them; but they too, are overworked. Where men cannot have even Sunday to themselves and their families, they are sure to become discouraged and "beat out" physically. The rights of a railroad man to his life, his rest and his morals are not to be put aside even by roads which are carrying grain to feed the world.

The Western railroad man flits about much more than his brother at the East, and he has less professional interest in his business, perhaps for this very reason. Good substantial men, everywhere, are apt to stick. I met yesterday a runner on the Rock Island with excellent blood in him, who has long been a reader of the *Railroad Gazette*, and has run on this road for twenty years; but it is not uncommon to meet men who have worked on three, four or more roads (and who do not read the *Gazette*, or only "used to do so").

Sometimes the road itself is responsible for these frequent changes on the part of its employés, and we regret to say that many companies appear to show no care for the loyalty and confidence of their men. No doubt they will come to this in time; but just now every railroad officer is so busy in keeping his decks clear he has no time to think of anything but getting the control of some connecting branch of road. Men live here for the future and for the excitement of hard work and pressing business. This has an admirable effect on the bottom of society, but I doubt its good effects on the leading men. There is an influence of quiet and rest which every active man needs, and probably few busy railroad men get. A man who never reads, whose mental machinery is in such a buzz that a quiet hour with a substantial *Gazette* article is a bore, lacks something necessary to every growing man, and will wear out by and by, and be surpassed by more quiet and less noisy men.

ADVERTISING.

The Rock Island road, as is well known, is active and aggressive in seeking passenger traffic. Its map of the road

addressed to "the man who does not understand the geography of this country" has been spread far and wide, and is paid for by a system of editorial mileage books which are transferable and have become a regular article of trade, retailing at about two and a half cents per mile. The Chicago, Burlington & Quincy has, I believe, adopted something of the same plan of payment for newspaper advertising. This is undoubtedly an improvement on the old plan of "editorial" passes, not transferable and therefore leading to all sorts of left-hand bargains and right-hand lies, and any substitute for the "pass" system is a good one. I was in an office recently, when a well dressed gentleman came in and asked for the General Passenger Agent, expressing his great annoyance at finding him away, as he expected to get a pass. When asked on what grounds, he replied, "On general principles." A friend of mine connected with a prominent Western road thinks the whole Granger movement arose out of the refusal of the companies to give passes on these "general principles," and perhaps it was not without its effect. There would be less public objection to such passes if only one thing could be accomplished, namely, the passage of a law that the name of every holder of a pass should be publicly advertised with the reasons for his getting it. The evil would then cure itself, and that speedily.

X. Y. Z.

Easy Methods of Staking Out Side-Tracks.

TO THE EDITOR OF THE RAILROAD GAZETTE:

While not claiming any originality for the following methods, I simply wish to aid the younger members of the profession in what they generally find to be a rather complicated and perplexing piece of work. Having searched the numerous field books in vain for a simple method of staking out side-tracks, I was at last started on the right method by my friend Col. S. T. Emerson, of St. Louis, and following out his suggestions, I evolved the following rules and methods, and I find staking out a side-track from a curve as easy as any other transit work.

Another very desirable feature of this method is that the track-men have no trouble in following the stakes, which is hardly ever the case when the centre line of the side-track is begun on the centre line of the main track, as is done by many engineers. This is incorrect. The turn-out curve does not begin on the centre of the main track, but five inches from it, the distance of the throw. Neither is there any certainty of getting the frog at the proper distance from the head-block, nor of getting the proper frog angle.

Let us for a moment consider how the track-men put in a switch. They take two 30-ft. rails for switch rails. They spike the first ten feet and leave twenty to swing. Then they take two 30-ft. rails for the lead, and at the end of them they place the frog. The frog is generally a No. 9 angle 6° 22′. It is about nine or ten feet long, and from the end to the point about five feet. This makes the distance from the head-block to the point of frog about 65 ft.—very near the theoretical distance as given by the tables. Then the track-man lines in the turn-out curve on the inside rail with his eye, and gauges the other rail to it. To do all this he needs no stakes whatever. They are more of a hindrance than a help. He only requires to know the position of the head-block and the frog. Now the method as taught me by Colonel Emerson is this, as shown in Fig. 1:

On the main line we fix three points, A for the head-block, 65 ft. from that B for the frog, and another point C at any convenient distance. Then from the points B and C, we measure over at right angles the width of the gauge (say 4.75 ft.), and set two other points, D and E. Then we set the transit over D and sight at E, and from that line turn off the frog angle (say 6° 21′). This gives the centre line for the side track, and using this as a base to work from, we may carry the centres wherever we please. The track-man places the point of his frog at P, exactly half ways between the points B and D.

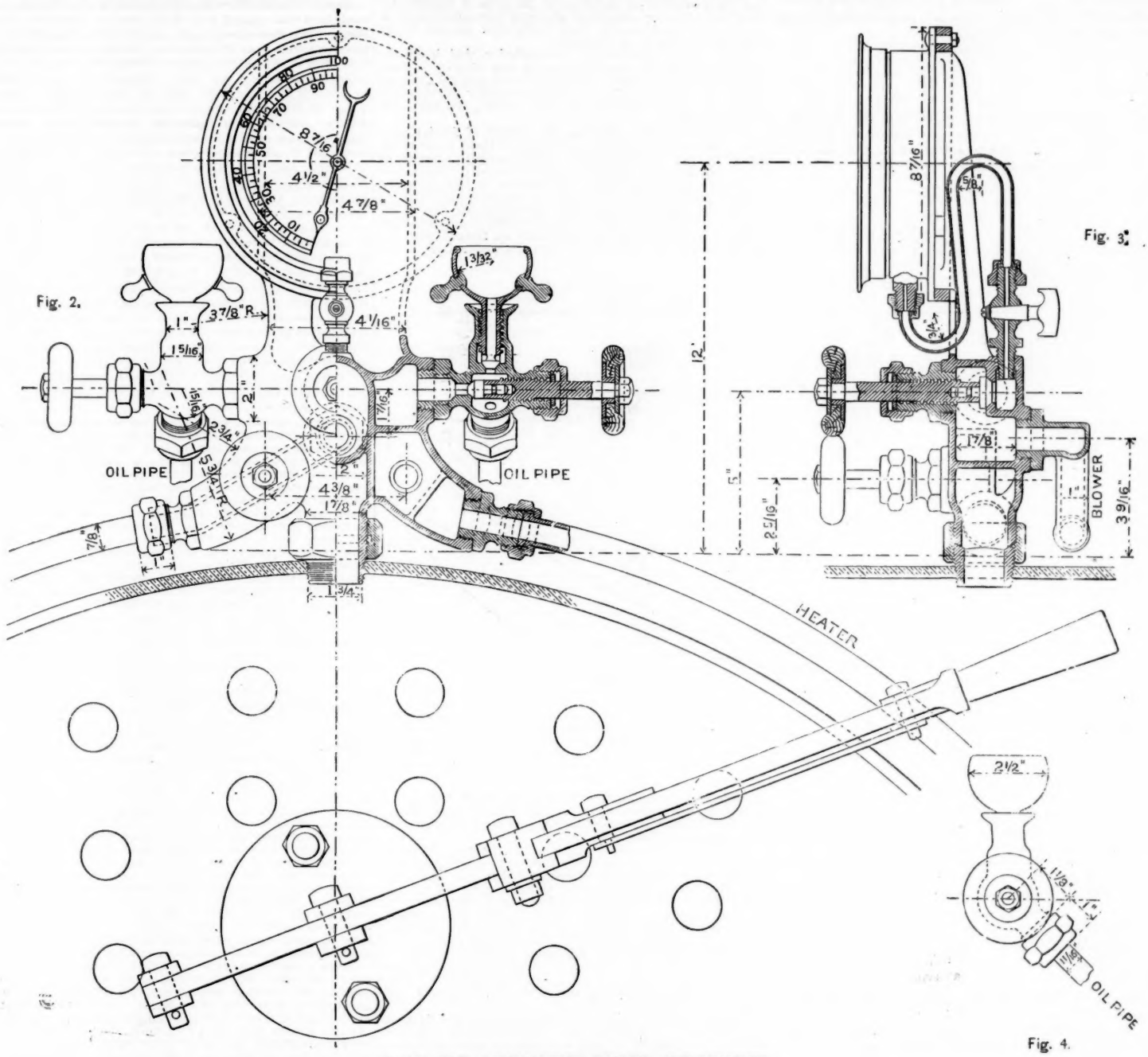
When the main line is a curve, the operation is the same, excepting that we measure the line $D\,E$, and consider it as a curve parallel to the main line. After sighting at E we deflect for the distance $D\,E$, and obtain a tangent to the curve at the point D, and from this tangent we turn off the frog-angle, as before.

Now having the line $D\,F$ to work from, let us suppose that we are required to run a line for a side-track, at any certain distance from the main line and parallel to it. The line $D\,F$ must then be transformed into a curve connecting with the given parallel side-track. The curve may be started at any point on the line $D\,F$, but we generally begin it at the point D, directly opposite the point of frog. This gives the longest and flattest curve.

First let us proceed on the assumption that the main line is straight:

Let D = the distance apart of the parallel tracks, centre to centre.

G = the gauge.



STAND FOR LOCOMOTIVE BOILER ATTACHMENTS.

N = number of frog (ascertained by dividing the length of its tongue by the breadth.)

A = angle of frog (ascertained by dividing the breadth of its tongue by the length, the quotient being the natural tangent of the angle).

Then the radius of the connecting curve will be:

$$\text{Radius} = N(D-G) \times \cot.\frac{A}{2};$$

and from this radius we may ascertain the degree of curvature by a table of radii. The length of the curve will be:

$$\text{Length} = \frac{A}{\text{Degree of curvature.}}$$

This length will be the same where the distance apart of the parallel tracks remains the same, whether they are straight or curved; but the degree of curvature will vary directly with the degree of curvature of the main track. To ascertain this variation:

Let S = the degree of curvature of the connecting track, as already ascertained for a straight main track.

M = the degree of curvature of the main track.

O = the degree of curvature required for a connecting curve on the outside of a curved main track.

I = the degree of curvature required for a connecting curve on the inside of a curved main track.

Then $O = S + M$.

And $I = S - M$.

If the result of the last equation is a minus quantity (as it

will be when M is greater than S), it will show that the side-track is to curve away from the main track, instead of toward it, as in Example III.

Example I.

Let $D = 14$ ft.
$G = 4.75$ ft.
$N = 9$.
$A = 6° 22'$

Then

$$\text{Radius} = 9\,(14-4.75) \times \text{cot. } 3° 11'$$
$$\text{Radius} = 1{,}496.8 \text{ ft.},$$

which is very nearly the radius of a 3° 50′ curve.

This is the most common case. A straight main track requires a 30° 50′ curve, beginning at the point of frog and extending 166 ft., in order to throw off a tangent parallel to the main track and 14 ft. distant.

Example II.

Let $S = 3° 50'$
$M = 5° 00'$
Then $O = 3° 50' + 5° 00' = 8° 50'$

That is, having the main track a 5° curve, a side-track starting from it on the outside of the curve will require an 8° 50′ curve 166 ft. long to reach a line 14 ft. from the main track and running parallel to it.

Example III.

Let $S = 3° 50'$
$M = 5° 00'$
Then $I = 3° 50 — 5° 00' = —1° 10'$

That is, having a 5° curve on the main line, if we lead a side track from the inner side we will require a 1° 10′ curve turning away from the main line, or in other words turning in the same direction as the main track, in order to reach a line 14 ft. distant and parallel to it. See Fig. 2.

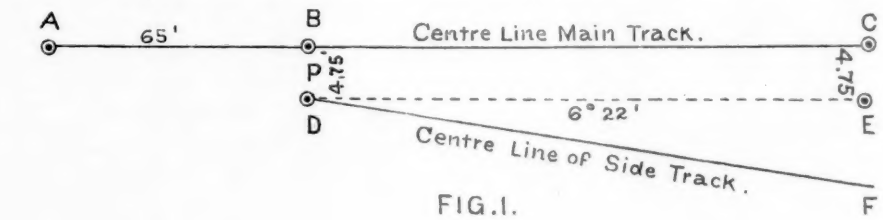


FIG. 1.

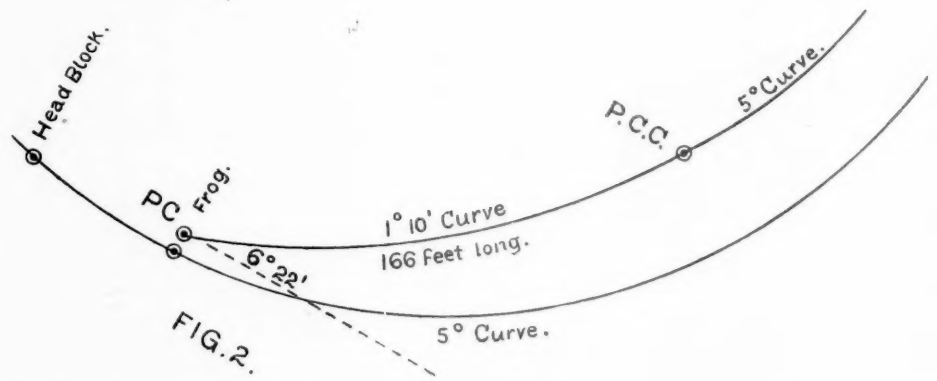


FIG. 2.

Example IV.

$S = 3° 50'$
$M = 1° 00'$
$I = 3° 50' — 1° 00' = 2° 50'$

In this case the side track, after leaving the main track on the inside of the curve at an angle of 6° 22′, attains its proper position by means of a 2° 50′ curve, curving toward the main track.

These matters may seem very simple to some of the older members of the profession, and indeed they are so, but I can remember when they perplexed me greatly. I hope they may help some who were troubled as I was.

ROBERT BURGESS,
Assistant Engineer St. Louis & San Francisco Railway.
SPRINGDALE, Ark.

MASTER CAR-BUILDERS' ASSOCIATION.

Fifteenth Annual Convention.

This meeting was organized in the parlor of the Park Avenue Hotel, in New York, on Tuesday morning, June 14, at 10 a. m. The convention was called to order by the President, Mr. Leander Garey. About fifty members were present at the calling of the roll.

Mr. Garey read the following address:

ADDRESS OF PRESIDENT GAREY.

Gentlemen of the Master Car-Builders' Association:

I am permitted to greet you again assembled together, for the purpose of receiving reports from your committees, and a mutual interchange of ideas; presenting for consideration any new discoveries made during the past year in reducing the cost of building and maintaining cars; and I trust each one is prepared to add something to the common fund of practical information.

Your committees having performed the duties assigned them by presenting all the information at their command, a free and full discussion of each subject will be of much benefit not only to those present but to many not able to be with us, by the use of printed copies of the proceedings.

A few master car-builders have been somewhat discouraged by the slow progress made in the general adoption of standards recommended by the Association; while others have claimed that more complete work ought to have been accomplished.

Admitting some cause for the complaints in each case, the good results already attained should stimulate all master car-builders to more active and thorough work in support of the Association.

Notwithstanding the imperfect organization and lukewarm support given by many master car-builders, and other influences not in harmony with the best working interests of the Association, the progress made is far beyond what could reasonably be expected.

I would suggest that a committee of three or more be appointed to report at this meeting what action should be taken to make the Association more efficient in its work, with a larger interest in and attendance at, our annual meetings.

It has pleased a divine Providence to remove from among us during the past year several of our members, one of whom, Mr. Enos Varney, assisted at the organization of the Association, and has aided us with his presence and counsel at all of our yearly meetings; by his death we lose a genial friend and a useful member.

The rapid increase in number of cars employed with the large variety of patterns used in some part of their construction shows a want of harmony in the ideas of master car-builders as to what constitutes the most economical mode of construction, and leads to many evils, with no end to the annoyances of delay and expense.

I will say, without fear of contradiction, that if all the freight cars in this country were of one pattern in those parts requiring frequent renewal, it would add not less than 15 per cent. to their present working capacity for transportation purposes by the time saved in making the necessary running repairs.

The present rules governing the repairs of foreign cars, and settlement for the same, in cases of their destruction, are to be revised, and all roads offering cars for interchange traffic should be a party to and governed by the revised rules; and each road should have a voice in perfecting the rules in proportion to the number of cars controlled by it.

The old method of inspecting and repairing cars under load at interchange points is unnecessarily expensive, often causing useless delays in movements of freight, with the attendant cost of switching and repairs under most of the possible disadvantages. The whole arrangement for moving freight long distances over several roads without transferring loads at terminals is mutual, and should extend to all departments affected by it.

Where two men are now employed at one place to determine what repairs are necessary for cars to continue on their journey with safety, noting their condition, one man ought to decide for both parties, and thereby carry out the system, much to the advantage of all persons interested.

Joint inspection of cars at all interchange points would give dispatch to freight, largely reduce the cost of running repairs, and remove many just causes of complaint.

In connection with joint inspection could be perfected a system of noting the condition of all cars passing, and reporting those requiring general repairs, to owners. Such reports would tend to bring cars in line service up to a high grade of condition.

Coupling links and pins have been the cause of extraordinary expense and considerable discussion during the past season. The variety of sizes and lengths, with the lack of room in draw-bar heads for coupling links to move without being crushed or broken in buffing (not including the poor quality of materials used in their construction), has caused many accidents, much destruction of property, and in some cases loss of life.

I was much surprised to find on examination that most of the cast-iron draw-bars in use are not large enough to allow the draw-bar heads to come in contact with each other without crushing the link. Coupling links and pins of a suitable size and strength, with sufficient room for their free action in draw-bars, should receive special attention during this meeting and a standard for each be established. I would suggest that special irons be manufactured to be known as "railroad coupling link and pin iron," having special qualities best adapted for the service.

According to our by-laws, the hours of daily session are from 9 o'clock a. m. until 2 o'clock p. m., and I would request each member to be present during all the hours of each session and give all possible assistance to dispatch the business satisfactorily, which can not be as well performed with a part of the members absent.

Thanking you for your kind attention, we will now enter upon the business of the convention.

The report of the Committee on the Standard Journal-Box was then read. (This report and the action thereon will be published in a future number of the *Railroad Gazette*.)

The following report on Screw Threads was then read:

REPORT OF COMMITTEE APPOINTED.

"To Investigate and Report on the Present Construction of Screws and Nuts used on Cars; and the Amount of Accuracy that it is Desirable to Secure and the best Means of Maintaining it in the Standard Adopted by the Association in Richmond, Va., June 15, 1871, and to Draw up Communications Addressed to the Managers and Superintendents of Railroads, Showing the Necessity for the Use of even Sizes of Screw-threads, and the Amount of Saving, as near as it can be Estimated, which will Result to the Roads by strictly Adhering to this Practice."

Your Committee regret that they can do little more than repeat what they reported to you last year. At that time a member of your Committee made the following verbal statement:

"At the last meeting, you remember that our Committee was instructed to prepare a circular urging the adoption of the Franklin Institute standard for screw threads. After that resolution was passed, the Committee examined into the matter and found that some discrepancies existed as to the manner of manufacturing taps and dies. It is an illustration of the extreme difficulty of introducing a standard of any kind whatsoever, unless there is some sort of a record in the form of specifications or gauges—some ultimate standard of reference. You may all know that the Franklin Institute standard was proposed by Mr. William Sellers, of Philadelphia, and was first adopted by the Franklin Institute. The standard specifies certain things, among them the diameter of the screw and the angle of the thread. When manufacturers commenced making those taps and dies, some sets of gauges were made by a man named Fox, in the city of New York. Those gauges were distributed around, and the Morse Twist Drill Company procured a set of them, and worked according to them. The Pratt & Whitney Company, of Hartford, when they commenced making taps and dies, undertook to work as nearly as possible to a true inch, and for that purpose procured a set of Whitworth gauges from England. When the Erie Railway undertook to introduce standard screw threads, they found that when they took a nut from one manufacturer, and attempted to screw it on a bolt of another manufacturer, it would not go on. This led to the discovery that there were differences in the taps and dies of the different manufacturers of the country. This coming to the attention of the President of the Association, it was decided to ask Mr. William Sellers to come to the rooms of the Association and make a statement with regard to the matter. Mr. Sellers did that, and, I think, was surprised to find that such discrepancies existed. The next thing was to induce the manufacturers to come together and try to reconcile their differences, and at this time the Morse Twist Drill Company and the Pratt & Whitney Company are engaged in a most thorough investigation of the subject. The Committee did not feel justified in preparing such a circular as they were instructed to so long as these discrepancies existed among the manufacturers of taps and dies. But in a very short time those discrepancies will be reconciled, and we shall have a standard by which we can be guided, and I would suggest that the Committee be continued another year."

Since then the same member of your Committee who made the above statement has visited the Pratt & Whitney works at Hartford, and there learned that the whole work of constructing standard gauges has been assigned to that company, and that for the past year, or longer, they have diligently been at work on the machinery and instruments for making them. To show the difficulties which must be met when exact precision is aimed at, it may be of interest to state that their first step was to procure one or more standard yards, that is, metal bars exactly a yard long. These they procured, as nearly of the correct length as it was possible to obtain, they were taken or sent to those persons who it was thought had the most exact means of measuring them, when it was found that the measurements of no two of these persons of the same bar nor no two of the bars was exactly the same. It then became necessary to have a standard yard verified in London, next to make a machine to measure and subdivide it. Persons not acquainted with the difficulty of attaining any high degree of precision in measurements can have no idea of the amount of labor involved in doing it. Let it be sufficient to say here that the Pratt & Whitney Company have employed a number of the most expert persons they could obtain to do this work, who have been constantly employed on it at a very heavy expenditure of money, and their task is not yet completed. Besides a machine for making linear measurements, instruments had to be constructed for measuring the angle of the threads and their pitch. Having advanced this far there would be little trouble in making correct cylindrical gauges, but they found that in order to get at the size of a screw with any precision, it is necessary to measure it over the sides of the threads. There is no difficulty in making a correct steel screw gauge which is not hardened, but such gauges would soon be worn and then would no longer be correct. It therefore became necessary to devise a process by which they could be hardened, and then ground to the correct size. This has been done, and the Pratt & Whitney Company expect to be able to supply screw and other gauges within six months which will be nearer absolutely correct sizes than any which have ever been made. In fact, this company expect when their instruments and machines are completed to attain a higher degree of precision in measurements than has ever been reached before, and it is confidently expected that their measuring machines (they are making two, one to go to Cambridge) will be the most exact instruments of the kind in the world. The work which they are doing will, in fact, be a great step in advance in the science of exact measurement, and will, when it is completed, make a very much higher degree of precision in mechanical construction possible than has been attainable heretofore. To the Pratt & Whitney Company great credit will be due for undertaking this work and carrying it through in so thorough a manner and at so great an expense. This Association will also have the satisfaction of knowing that through its efforts the manufacturers of tools of precision were led to undertake this work, as it was the car builders who originally called the attention of the manufacturers of taps and dies to the discrepancies in the sizes of such tools made at the different establishments.

The facts as related lead your Committee to ask to be continued for another year, as they feel confident that before the end of that time they will be able to perform the duty you have assigned to them more satisfactorily than heretofore, and that the gauges of the Pratt & Whitney Company will make it possible to establish a standard "of the amount of accuracy desirable in screws and nuts" with a degree of precision which has thus far not been practicable.

JOHN ORTTON,
M. N. FORNEY.

A resolution was then adopted continuing the committee for another year.

Mr. Kirby introduced the following amendment to the Constitution as a substitute for Article III.:

PROPOSED AMENDMENT TO THE CONSTITUTION.

SEC. I. There shall be three classes of members, Active, Representative and Associate.

SEC. II. Any person holding the position of Superintendent of the Car Department, Master Car-builder, or Foreman of a railroad car shop, and one Representative from each car manufacturing company may become an Active Member by signing the constitution, or authorizing the President or Secretary to sign for him, and paying his dues for one year.

SEC. III. Any person having a practical knowledge of car construction may become a Representative Member by receiving a written appointment from the President, General Manager or General Superintendent of any railroad company to represent its interests in the Association. Such member shall have all the privileges of active members, and in

addition thereto, on all measures pertaining to the adoption of standards for car construction, or the expenditure of money, he shall have one more vote for each thousand cars owned by the railroad company which he represents. In the enumeration of four, six or twelve-wheeled cars, four axles to count as one car. The dues of Representative Members shall be in proportion to the whole number of votes they are entitled to cast. Their membership shall cease if their appointment expires, or is revoked by any officer authorized to do so, or when such a member leaves the employ of the company by which he was appointed.

This was referred to a committee consisting of Messrs. Hildrup, Verbryck and C. E. Garey, with instructions to have it printed and report on Wednesday morning.

Mr. C. E. Garey then read the report on Train Brakes.

REPORT OF COMMITTEE ON FREIGHT-TRAIN BRAKES.

To the Master Car-Builders' Association:

GENTLEMEN: Your Committee on Freight-Train Brakes was increased at the last annual meeting of the Association from three to five members, and submit the following report:

1. In order to get all the information possible upon this subject, a large number of circulars were forwarded to the railway superintendents and master car-builders in general throughout the United States and Canada; also to many others presumed to be interested in the safe and rapid transportation of freight, asking for information upon specified points, with which you should be so familiar as to not require repetition here, and should this report fail to meet the expectation of members, they may consider if they have contributed assistance in preparing it, as requested through said circulars.

2. Dr. Smith's patent brake has been reported as doing good work on the Buffalo & Lake Huron Division of the Grand Trunk Railway. This brake can be applied to the front or rear of train of 10 or 12 cars by one man. The cars require a special connection between them to operate the brakes. It has been in operation some 15 months, requiring little or no repairs. The first cost is from seven to eight dollars per car.

3. The American Brake Co. has a number of cars equipped with its freight-train brake on the St. Louis & San Francisco Railway. A very satisfactory trial was witnessed by one of the members of your committee last winter, but as printed circulars of this trial have been quite extensively circulated, it is unnecessary to report it here. Your committee apprehend some difficulty in the practical working of this device, not only in regard to its construction but also in the fact that there is no arrangement for utilizing the car-brakes until a speed of 6 or 7 miles per hour has been attained, but, as we understand several hundred cars are to be equipped with it on that road, its practical efficency is in a fair way of being thoroughly tested. The weight of this brake is about 250 lbs. for double brakes; springs, 4 lbs.; cast-iron, 20 lbs.; malleable iron, 20 lbs.; and wrought-iron, 166 lbs. Cost, about twenty dollars.

4. A new invention known as the "Reed" brake has been in operation for nearly a year. The inventor has given it careful attention on the trains, modifying and remodeling, until well satisfied with its performances. It requires no attention from train-men, setting itself at a speed of 3 to 4 miles per hour, and releasing at 2 to 3 miles. The weight of this brake is about 500 lbs. Consisting of steel-springs, 27 lbs.; wrought-iron, including bolts, chains, etc., 180 lbs., and cast-iron, 295 lbs.

It is applied to one end of the car only, but operates the brake in either direction.

This brake is open to the same objection as the preceding one, although in a less degree, as it is set at a slower rate of speed.

5. The "Tallman" brake has also been running since last summer, and has been much improved to overcome difficulties as they have presented themselves in practical operation during the past year. This brake has the advantage of stopping the train at all rates of speed, and holding it until the engineer is ready to move, and can be readily set by brakemen when making up the train, by a quarter turn of a short handle at either end of car. The weight of this brake is about 450 lbs., consisting of steel springs, 7 lbs.; cast-iron, 385 lbs.; and wrought-iron shafts, bolts, etc., 60 lbs.

This weight being equal on each truck. Probable cost, about $25.

At a trial of this brake some time since, good stops were easily made, and your committee think it is worthy of a more extensive trial, having been in use on only five cars.

Both of these brakes are simply additions to the hand-brake system now in use, operating all the brakes, whether on one or both trucks, and are independent in their action on any car to which they are applied, without any other connection than the ordinary coupling between the cars. They can be seen at the New York & Harlem freight depot, Forty-seventh street and Fourth avenue, New York city, by any member of the Association desiring to inspect them.

6. At the last annual meeting, your committee reported 22 freight-train brakes; since that time 14 more have been brought to our notice, making 36 in all. Of these, over one-third are designed to work independently of any special connection between the cars, but, in regard to the practical operation of these new devices, with a single exception, we are not advised. Yet, the efficiency of those named, as practically demonstrated on a small scale during the year would seem to warrant your committee in the belief that railroad companies can afford to encourage inventors, by using enough of those which act independently on any car to fully develop their capabilities and secure to themselves the advantages of a more rapid movement of freight trains, and, as long as they will all work together in the same train, independently of each other, each corporation can select the one that commends itself to their judgment and still have it work harmoniously with those of connecting lines.

In conclusion, your committee would recommend the fitting up of 50 cars, at least, with each independent brake (although none of them have reached the highest point of perfection), which has been thoroughly tested and proved successful on a small scale, and running them in trains with 25, 50 and 75 per cent. of cars *not* so equipped, at from 15 to 30 miles per hour, in long trains, to demonstrate the per centage of automatic brakes required, with the rate of speed at which the engineer would have complete control of his train, and, at the same time, determine the action of the brakes in running over grades, through sags, etc.

All of which is respectfully submitted.

C. E. GAREY,
GEO. HACKETT,
L. GAREY,
J. P. COULTER, } Committee.

The following question was then proposed for discussion: "What has been the effect of cars of 20 tons capacity upon the car-wheels, bearings, journals and rails?"

Mr. GAREY thought that the difficulty consists in the deficiency of brake power and that if cars as heavy as that are used, the brakes must be applied to both trucks.

Mr. HODGE, of the Missouri Pacific road, said that they were using cars of 20 tons capacity without difficulty.

Mr. DAVENPORT remarked that he had learned that a prominent road had now under consideration whether it should not construct cars to carry 30 tons.

The CHAIRMAN remarked that some wheel manufacturers were of the opinion that the wheels now in use are too light for the heavy loads now carried.

Mr. DAVENPORT said that the manufacturers of wheels were now making great efforts to improve their wheels by getting purer iron, or iron with less silicon in it. Not only have the loads which wheels must carry been increased, but the speed of trains is now greater than ten or fifteen years ago.

Mr. BISSELL called attention to the impossibility of having journal-boxes and bearings made of uniform size, unless they are carefully gauged after they are made. He was using a system of gauges and each molder was held to account for the size of the pieces which he makes.

The Treasurer's report was read, and showed a balance of $550.31 in the treasury.

The meeting then adjourned to meet at 9 o'clock on Wednesday morning.

The morning session of Wednesday was devoted entirely to the discussion of the proposed amendment to the constitution. It was contended by those favoring the provision that it would gain for the association the active interest of the heads of the various railroad companies, and by those who opposed it that too much power would thereby be given to the wealthier corporations. The matter was finally referred to a committee of five, to be reported on at the next annual meeting. The remainder of the morning session was occupied by the discussion of the report of the Committee on Brake-Shoes. The afternoon session was devoted altogether to discussion of the rules governing the interchange of freight cars.

Electrical Railroads.

At a meeting of the Society of Arts in London, May 25, Mr. Alexander Siemens read a paper on "Electrical Railways and Transmission of Power by Electricity," from which we take the following:

One of the first thoughts of Dr. Werner Siemens was to employ dynamo-electric machines for working elevated railroads, but it was only about three years ago that he was induced to take the matter into serious consideration by the owner of a coal mine asking him to design a locomotive to draw the coal wagons in the mine. The result was that Messrs. Siemens & Halske showed at the Berlin Exhibition, in the summer of 1879, the model of an electric railway, which has since been exhibited at Dusseldorf and Brussels and is at present working in the Crystal Palace. The total length of this circular railway was at Berlin 300 metres and the gauge one metre. A dynamo machine, mounted on a carriage by itself, served as locomotive, and the passengers were conveyed in three carriages, each having seats for six persons. The current was conveyed from the primary machine to a rail laid between the rails on which the carriages run; thence it was taken off by brushes fixed to the machine and sliding on the centre rail, and returned to the primary machine by the outer rails. When the carriages were prevented from moving the locomotive exerted a pull of about 4 cwt. (200 kilos.) on them; and when the train was in regular motion; the pull varied between 1½ cwt. and 1¾ cwt. (70-80 kgr.), which represents, as the speed was about 10 feet (3 metres) per second, three-horse power. Small as the railway was it clearly demonstrated that such a mode of transport is feasible; and the advantages of having light carriages and of being able to propel them without noise and smoke, induced Messrs. Siemens and Halske to lay before the authorities in Berlin a plan to make an elevated railway through one of the streets in Berlin, altogether about 6¼ miles (10 kilom.) long. Along the curbstones of the street, iron columns, formed by two-channel irons, were to be erected about 11 yards apart, carrying wooden sleepers on top, which, in their turn, support longitudinal girders. To insure the stability of the structure, wooden struts keep the girders apart, and serve at the same time to insulate them from each other. The clear height, from the level of the street to the under side of the girder, is about 14 ft. 6 in (4.4 metre), and the depth of the girder about 16 in. (40 c. m.). Steel rails are laid on the top of the girders, and the girder and rail on one side serve as the conductor from the primary machine, and the other rail and girder form the return wire; in this way the electrical resistance of the line is reduced to a very low figure. The gauge of the line was to be one metre, and the carriages, resembling ordinary tramcars, were to be about 5 ft. 5 in. broad (1.65 m.) and 8 ft. (2.46 m.) high above the rails.

The dynamo-machine, placed out of sight, underneath the car, imparts the motion by means of belts to the two wheels, which have to be insulated from each other, as the current arrives through one rail, passes through the machine, and returns by the other rail as described above. The speed at which these carriages were intended to travel is thirty kilometres (18.6 English miles an hour), and ten of them were to be supplied for the railway, of which six would be in use and four in reserve, ten horse-power being required to drive the primary machine of each carriage. The cost was carefully worked out, and, as it serves as an indication what such railways may be expected to cost, a short summary of the principal items will not be out of place.

FIRST COST OF 10 KILOMETRES (6¼ MILES), ELEVATED RAILWAY, SINGLE LINE.

Railway itself, including ten stations	£61,000
Ten carriages, to hold fifteen persons each	3,150
Stationary steam-engine and dynamo-machine	1,950
Buildings	1,185
Land	4,500
General expense	715
	£72,500

or about £11,600 per mile. This estimate includes the cost of erection of the railway, and of the station at which the steam-engine works, together with the necessary buildings to protect the rolling-stock against the weather, when it is not used. The cost of working the railway was calculated to be for one year:

CURRENT EXPENSES.

Wages	£2,190	
Fuel	1,110	
Oil and waste	50	
Lighting	80	
		£3,420

DEPRECIATION AND REPAIRS.

3 per cent. on £62,500 (railway and buildings)	£1,875	
16 per cent. on £5,000 (carriages and machinery)	800	
		£2,675

INTEREST ON CAPITAL.

5 per cent. on £75,200	£3,625
Total cost per annum	£9,720

or about £4 6s. per English mile per day. The intention was to run about 200 trains per day, and, if the charge of one penny per mile had been made, the £4 6s. per mile could have been earned if on the average five or six persons had been conveyed in each case. The concession for this railway was not granted, partly because the inhabitants strongly objected to having people looking into their first-floor windows, and partly because the Emperor did not wish to see disfigured "The Linden," which this electric railway was to cross. Subsequently, Messrs. Siemens and Halske obtained permission to build a railway on the ground level from Lichterfelde, a suburban station on the Berlin-Anhalt Railway, to the Military Academy, and this railway has just been successfully opened for regular traffic. It is a single line of one metre gauge, a little over 1½ English miles long. The permanent way has been constructed in exactly the same way as that of railways; wooden sleepers and steel rails are employed, the rails being connected, in addition to the usual fish-plates, by short straps of iron, bent in the shape of a bridge, so as to admit the adjustment of the rails to different temperatures and to reduce at the same time the electrical resistance. As the currents are low tension currents, it was not necessary to provide further insulation, and no difficulty is experienced in using one rail as the positive and the other as the negative conductor. About a third of a mile from Lichterfelde station the primary machine, with its steam-engine, is erected in the engine-house of the water-works, and the current is conveyed from there to the rails by underground cables. The car is exactly similar to an ordinary tramcar, and is constructed to hold twenty persons besides the guard. It is symmetrical, and can move backward and forward, each end being provided with a starting lever for the guard, a brake handle, and a signal bell. The dynamo machine is placed underneath the car and transmits its movement to the wheels by means of spiral steel springs. The tires of the wheels are insulated from their axles, and are in electrical connection with brass rings, fastened on the axles, but insulated from them. Contact brushes press against these brass rings, and from them the current is conducted to the dynamo machine and sets it in motion. The authorities were, for some time, doubtful how to class this novel railway, and after long deliberation they have decided to rank it as a tramcar.

In consequence of this decision the average speed on the new railway must not exceed 9.3 English miles (15 kilometres) per hour, and the greatest speed at any moment must not exceed 12.4 English miles (20 kilometres) per hour. The time for traversing the whole distance is, therefore, not to be less than ten minutes, although the car could make the journey in about half the time with perfect safety. If the railway continues to work in a satisfactory manner it is to be extended, and there is no doubt that the success of the railway at Lichterfelde will greatly assist in the further introduction of electrical railways, either on the level of the streets or elevated, like the steam railways of New York. Over any other system, worked by steam or compressed air, the electrical has the advantage that no heavy machinery has to be carried about to set the train in motion. The carriages can therefore be built in a lighter manner, thus reducing the power necessary to move them, and permitting all bridges and other superstructures to be built more cheaply than usual. Several carriages, each with a dynamo machine, can be joined to one train, and by this distribution of the motive power, much steeper inclines can be overcome than when the same train is drawn by a single locomotive. In addition to the ordinary brakes machines can be provided to short-circuit the machines on the carriages, and to cause them in this way to act as very powerful brakes. The use of large stationary engines reduces the amount of fuel necessary to develop a certain power on the traveling carriage, and, if waterfalls can be utilized, the cost of working these railways can be further diminished. It seems, therefore, probable that such railways can be usefully and economically constructed to facilitate the traffic in crowded streets, or in situations where local circumstances favor their application. From all that has been done during the last few years it is quite evident that the art of transmitting power by electricity has advanced rapidly, and that its practical application is continually gaining ground. This, however, should not be regarded as a sign that the electric transmission will supersede every other system of transmitting power to a distance—but rather that there is a sphere for it, where it meets existing demands better than our present means, and it should, therefore, not be treated as an enemy of existing systems, but as a supplement to them, by the aid of which problems can be solved that could not be otherwise attempted.

In the discussion that followed, Dr. C. W. Siemens, alluding to the electric railway between Lichterfelde and the Military Academy near Berlin, explained that the remarkable fact had been established in connection with the electrical transmission of power that as the resistance to the machine which drove the carriage increased so the force to overcome the resistance increased also. Thus the ascent of an incline resulted in but a comparatively small decrease of velocity. Although the speed of the train had been limited by the authorities to ten miles an hour, an average rate of 25 miles had actually been attained, so that whilst the carriage was classed as a "one-horse tramcar," the speed of a horse had been exceeded by two or three times. It was contrary to the dictates of common sense to suppose that the electric railway would banish the locomotive engine, but he had no doubt that the electrical transmission of the power would be efficacious for traffic of a local character, such as tramways, the conveyance of minerals from the interior of a mine to the bank, and, in exceptional instances, the driving of the heavy trains. The St. Gothard Tunnel Company had instructed the firm with which he was connected to work out a plan for utilizing the water power, which could be readily obtained near the entrance of the tunnel for the passage of trains through; and, if a train could be sent by electric current through the long Alpine tunnel, the convenience and comfort of the passengers would be promoted and a great saving of expense realized by the company. Coming near home, he conceived that the Metropolitan District Railway might lend itself to the application of electrical transmission. All who were in the habit of traveling on the line had experienced inconvenience from the products of combustion choking the atmosphere. He believed that plans had been proposed for more thoroughly ventilating the tunnel, but after all that was only a palliative. It had been suggested that the engines should be propelled by compressed air. He had nothing to say against that method; it might answer its purpose perfectly well. But he was convinced that if electrical transmission were tried great certainty of action would be attained, the trains would be propelled without fear of their stopping midway, and a material economy would be effected. Before long a move might be made to test a system of which sufficient was already known to prove that it was deserving of serious trial.

Railroads and Telegraphs in China.

China is likely to profit in an unexpected way from the scare she has lately been in over the threatened Russian invasion. The palace authorities have always looked with disfavor upon the building of railroads within the boundaries of the empire. Not long ago the government bought up and quietly suppressed a road which foreign capitalists had built and were operating, believing that a sedan chair was a sufficiently swift and luxurious method of traveling for Chinamen. But the Ministers who

had charge of the war preparations found themselves sorely hampered by the total lack of adequate means of transportation of troops and supplies, and it seems to have struck the palace people that their great empire is practically defenseless so long as it is without railroads and telegraphs. Preparations are making, therefore, to introduce both on an extensive scale. Nearly a year ago the Emperor and his advisers gave permission for a telegraph between Pekin, Tientsin, and Shanghai. These lines will be completed this year, and there is little doubt that all the great cities of the empire will soon be connected by telegraph. The imperial sanction has also been obtained for a railroad from the capital to the port of Tientsin, a distance of 70 miles, and thence to the Yangtsekiang River, 500 miles further south. The imperial treasury is not just now in a condition to justify so extensive an undertaking on the part of the government, for the payment of the Russian indemnity, though amounting to no more than $13,500,000, will strain to the utmost its financial resources. Foreign capital can be had in abundance if the government will guarantee that the roads shall be built and operated, in their own way, by those who furnish the money. The whole movement is deeply significant, showing that the Chinese are waking up to the fact that Confucius is a trifle out of date, and that they must get new ideas somewhere if they don't want their empire to go to seed.—*New York Times.*

ANNUAL REPORTS.

The following is an index to the reports of companies which have been reviewed in previous numbers of this volume of the *Railroad Gazette :*

Cincinnati, Hamilton & Dayton.

This company works the following lines :

	Miles.
Cin., Hamilton & Dayton, owned, Cincinnati to Dayton	60
Dayton & Michigan, leased, Dayton to Toledo	142
Cin., Richmond & Chicago, leased, Hamilton, O., to Richmond, Ind.	45
Cin., Ham. & Indianapolis, Hamilton, O., to Indianapolis	98
Total	345

The Cincinnati, Hamilton & Indianapolis is practically owned, though nominally under a separate organization. The report is for the year ending March 31, 1881.

The equipment consists of 84 engines; 61 passenger, 3 mail and 21 baggage cars; 1,216 box, 186 stock, 279 coal, 416 flat and 31 caboose cars; 6 wrecking cars; 72 hand and 71 truck cars.

The general account is as follows:

Stock ($50,333 per mile)		$3,500,000.00
Bonds ($49,183 per mile)		2,951,000.00
Surplus earnings		1,800,967.69
Interest, dividend and rental accounts		171,478.31
Bills, accounts and balances payable		386,567.74
Total		$8,810,013.74
Road and property	$5,364,878.98	
Materials	306,458.83	
Stocks and bonds	950,597.76	
F. H. Short, trustee	86,924.57	
Leased lines accounts	1,721,370.85	
Accounts and balances receivable	169,838.79	
Cash and cash assets	209,943.96	
		8,810,013.74

During the year $1,235,000 first mortgage bonds, all but $7,000 of the issue, were retired and replaced by consolidated bonds.

The capital accounts of the leased lines are as follows :

	Dayton & Mich.	Cin., Rich. & Chi.	Cin., Ham. & Ind.
Stock	$3,612,824	$382,600	$279,767
Bonds	2,728,800	625,000	2,500,000
Due lessee	542,215	.....	903,723
Other accounts	164,921	18,611	53,515
Total	$7,048,760	$1,026,211	$3,737,005

The Cincinnati, Hamilton & Indianapolis stock is preferred stock, issued during the year by agreement in settlement of unpaid coupons. There is no material change in the other companies' accounts. Part of the Dayton & Michigan bonds have been replaced by a new issue at lower interest.

The earnings were as follows for the whole system:

	1880-81.	1879-80.		Inc. or Dec.	P. c.
Passengers	$901,170.36	$837,335.75	I.	$63,834.61	7.6
Freight	1,721,789.89	1,493,977.48	I.	227,812.41	15.3
Mail and expr.	88,074.94	83,128.18	I.	4,946.76	5.9
Rents, etc	97,148.27	99,531.98	D.	2,383.71	2.3.9
Pools	74,122.83	64,843.21	I.	9,279.62	14.3
Total	$2,882,306.29	$2,578,816.60	I.	$303,489.69	11.4
Expenses	1,975,323.04	1,692,767.47	I.	282,555.59	16.7
Net earn.	$906,983.25	$886,049.13	I.	$20,934.12	2.4
Gross earn. per mile	8,354.51	7,474.83	I.	879.68	11.4
Net earn. per mile	2,628.04	2,568.26	I.	60.68	2.4
Per cent of expenses	68.53	65.64	I.	2.89	....

Expenses include taxes. The expenses were largely increased by the high price paid for steel rails, and by the failure to sell old iron rails taken up before prices fell.

The result of the year was as follows:

Net earnings, as above		$906,983.25
Interest on bonds and rental dividends	$712,218.13	
Commission on $1,450,000 bonds sold	14,500.00	
Profit and loss, sundries	3,710.67	
		730,428.80
Net balance		$176,554.45
Dividend of November, 1880, 2 per cent.		70,000.00
Balance		$106,554.45

This balance was more than absorbed by the payment of $40,770.10 on account of guarantee of Cincinnati, Richmond & Ft. Wayne bonds; $43,310.50 for 6¾ miles second track; $23,236.65 for new dock at Toledo and other improvements; $39,815.44 on account of McComb, Deshler & Toledo road, making $150,132.69 in all.

The income and expenses were divided as follows :

	Income.	Expenses and interest or rentals.		Profit or loss.
Cin., Ham. & Dayton	$1,080,617.66	$847,176.92	Pr.	$233,440.74
Dayton & Mich	1,150,869.79	1,163,947.93	L.	13,078.14
Cin., Rich. & Chi.	224,649.92	231,781.02	L.	7,131.10
Cin., Ham. & Ind.	426,168 92	462,845.97	L.	36,677.05
Total	$2,882,306.29	$2,705,751.84	Pr.	$176,554 45

The total loss on the three leased lines, after paying all interest, dividends and other rental charges, was $56,886.29.

Freight trains earned $1.92 per mile run, against $2.27 in the previous year; passenger trains, $1.176, against $1.074 the previous year.

The traffic of the whole system was as follows:

Passengers carried (including commuters)	1,675,276
Passenger miles	40,892,877
Tons freight carried	1,393,776
Ton-miles	139,026,848

Of the passenger miles 14.2 per cent. were made by through passengers. The average rate per passenger per mile was 2.204 cents. The average rate per ton per mile was: Local, 1.279 cents; through, 1.160 cents; average, 1.259 cents, against 1.310 cents the previous year.

Renewals on the Cincinnati, Hamilton & Dayton include 22 tons steel rails and 29,162 ties ; on the Dayton & Michigan, 2,224 tons steel rails and 42,583 ties ; on the Cincinnati, Richmond & Chicago, 667 tons steel rails and 14,798 ties ; on the Cincinnati, Hamilton & Indianapolis, 747 tons steel and 26,746 ties. The usual renewals of buildings and bridges were made. Much expense was caused by freshets at Hamilton, and by the overflowing of the Toledo yard last February.

Three freight engines and one yard engine were built during the year ; 118 freight cars were added to the equipment. All new box cars are made 33 ft. long, to carry 20 tons.

The current liabilities at the close of the year were $550,820.18; the current assets, including old rails on hand, $562,279.57.

The deficiency on the Cincinnati, Richmond & Ft. Wayne guarantee is expected to be larger this year than last. This company has also been asked to make up its quota of equipment in use on that road.

Some increase of equipment is very much needed to meet the demands of business on the Cincinnati, Hamilton & Dayton and its leased lines. The passenger cars especially need renewal, and an increase in their number.

The Dayton and Indianapolis pools have worked well. The Dayton pool returned $42,387.29 and the Indianapolis pool $31,735.54 to this company.

The holders of $1,499,000 Cincinnati, Hamilton & Indianapolis bonds have surrendered the past-due coupons to Jan. 1, 1880, receiving preferred stock in return, in pursuance of the agreement. On the remaining $301,000 interest has not been paid or settled since July 1, 1877, and cannot be, except under the terms of settlement.

The directors have decided to pass the dividend for the last half of the fiscal year. The report states that terms of consolidation with the Cleveland, Columbus, Cincinnati & Indianapolis have been agreed on. They have now been ratified.

Denver & Rio Grande.

The report of this company for the year ending Dec. 31, 1880, shows the mileage (3 ft. gauge) of the road as follows:

At beginning of the year:	Miles.
Denver, Col., to Alamosa	250.0
Cuchara to El Moro coal mines	42.0
Pueblo to Cañon City and Coal Creek	45.0
Total, Jan 1, 1880	337.0
Opened for traffic, 1880 :	
Cañon City to Leadville	117.5
Leadville to Robinson Mine	16.0
Malta toward Redcliff	9.6
Colorado Springs to Manitou	5.3
Cañon City to Westcliffe	33.5
Antonita, Col., to Espanola, N. M	91.2
Spur and mine tracks	11.0
	284.1
Opened for traffic, 1881:	
South Arkansas to Silver Creek	13.5
Poncha Springs to Maysville	7.0
Alamosa to Amargo	116.2
	136.7
Total, April 15, 1881	757.8

The report, the first regular report issued for several years, gives a short history of the contest with the Atchison, Topeka & Santa Fe and the various troubles ending in the compromise agreement of last year.

To the 337 miles of track at the beginning of 1880 there was added 347.5 miles laid during that year, and 73.3 miles this year to April 15. The mileage at the close of 1880 was 684.5 miles; on April 15, 1881, it was 757.8 miles. The average worked for 1880 was 474 miles.

The equipment consists of 101 engines: 57 passenger and 32 baggage, mail and express cars; 1,043 box, 150 stock, 1,424 flat and coal and 38 caboose cars; 54 construction cars. Additions during the year were 60 engines; 44 passenger and 21 baggage cars; 710 box, 100 stock, 900 flat and coal and 26 caboose cars; 54 construction cars.

The general account is as follows:

Stock		$16,000,000 00
Bonds, including equipment trusts		18,936,432.50
Bills payable, etc		11,067.50
Due other companies	$649,086.26	
Less due from other companies	560,889.11	
		88,197.15
Profit and loss balance		258,668.55
Total		$35,294,365.70
Cost of property	$34,945,950.91	
Materials	102,562.15	
County and town scrip	432.65	
Cash	245,419.99	
		35,294,365.70

The bonded debt consists of $7,422,500 first-mortgage bonds, a first lien on 337 miles of road; $9,975,500 consolidated bonds, a second lien on 337 miles and a first lien on the rest; $1,250,000 Colorado Rolling Stock Trust; $286,000 Philadelphia & Colorado Equipment Trust, and $2,432.50 coupon certificates.

The earnings for the year were as follows :

Passengers	$945,031.00
Express and mail	115,866.09
Freight	2,411,457.25
Sundry	5,712.56
Total ($7,337.69 per mile)	$3,478,066.90
Expenses (50.82 per cent.)	1,767,605.10
Net earnings ($3,608.57 per mile)	$1,710,461.80

No comparisons can be made with the previous year. The report says : "From Dec. 13, 1878, to June 10, 1879, the road was operated by the Atchison Company. From June 11 to July 15, 1879, it was operated under the receiver appointed in the interest of the bondholders. From July 16 to Aug. 14, 1879, it was again operated by the Atchison Company. From Aug. 15 to April 4, 1880, it was in the hands of a receiver appointed by the Court ; and not until April 5, 1880, did the company resume permanent possession. The earnings for 1879, shown in the above table as $903,622,28 gross and $308,875.72 net, only represent the receipts for five months and 12 days, the revenue received by the Atchison Company during the first part of year not being included or known."

The income account, somewhat condensed, is as follows:

Gross earnings		$3,478,066.90
Insurance on cars burned		927.00
Total		$3,478,993.90
Operating expenses	$1,865,780.43	
Interest on bonds	778,639.52	
Interest on coupon certificates	70,620.32	
Interest, discount, etc	21,360.53	
New construction	126,976.66	
" equipment	77,928.50	
		2,941,305.96
Surplus for the year		$537,687.94
Debit balance, Jan. 1, 1880		279,019.39
Credit balance, Jan. 1, 1881		$258,668.55

It will be noted that the operating expenses given by the Auditor are $98,175.33 greater than is shown by the statements elsewhere in the report.

The traffic reported is as follows :

Passengers carried	140,840
Passenger miles	11,735,593
Average passenger journey	83.33 miles.
Average rate per passenger per mile	7.27 cts.
Tons freight carried	651,832

The report does not give the tonnage-mileage nor the rate per ton per mile.

Of the gross earnings $123,674.24 were from troops, mails and government freight; the sum of $93,459.55 was received for contractors' freight.

The earnings of the last half of the year were very largely in excess of those of the first half.

The report of General Manager D. C. Dodge states that 55 miles of the older part of the road have been laid with 40-pound steel rails to replace the 30-pound iron now badly worn. About 10 miles of new iron have been laid and a large number of ties. A number of new buildings have been put up, and several iron and wooden truss bridges erected in place of pile bridges. At Denver new and spacious shops have been built and well supplied with tools.

The reports of Chief Engineer J. A. McMurtrie and Superintendent of Construction R. F. Weitbrec contain a full account of the work of extension during the year. The Chief Engineer's report contains interesting tables of distances and elevations, showing the grades which the nature of the country has made necessary.

The report of President W. J. Palmer, after referring to the large additions made to the equipment, and to the organization of two equipment trusts to assist the company in making these additions, says:

"The power of our narrow-gauge locomotive engines and the carrying capacity of the cars have been gradually enlarged, until at present the standard weight of our freight engines, for mountain service, is 35 net tons, of which 32 are on the eight driving wheels. For ordinary grades, say 75 feet or less to the mile, the standard freight engine weighs 30 tons, of which 27 tons are on the eight drivers.

"The weight of passenger engines is 20 net tons, of which 14 are on the driving wheels.

"The load of the freight cars last adopted is 15 tons of heavy freight, and of the passenger cars a seating capacity of 44 persons.

"The service of passenger cars is equipped throughout with Westinghouse automatic brakes, and the entire freight service with the Westinghouse original air brake.

"Our standard diameter for wheels is now for freight cars 26 in., for passenger cars 28 in., for freight locomotives, driving wheels, 36 in.; for passenger, driving wheels, 45 in. The size of journals and axles on all coaches and 10-ton cars is 3½ by 6, and for 15-ton cars 3½ by 6 in."

After referring at some length to the policy of the company in occupying as fast as possible all the approaches to the rapidly growing mining regions in the mountain country of Colorado, the report says:

"The contest for the Grand Cañon was in reality a fight for the gateway, not to Leadville only, but to the far more important, because infinitely larger, mineral fields of the Gunnison country, the Blue and Eagle rivers and Utah. Again, the line known as the San Juan Division of the Denver & Rio Grande Railway, and especially that portion of it extending from Antonito to Chama River, has been constructed in spite of unusual natural difficulties. The result, however, is that a line of easy gradients (not exceeding 75 feet to the mile going westward), has been obtained as a means of transit to and from the San Juan country, Northern Arizona, Southern Utah and ultimately beyond. That portion of Southwestern Colorado which is drained by the San Juan River is a principality in itself, and contains in abundance the crude materials, which, under our form of civilization, make a country great and prosperous. Besides the gold, silver and lead mines which have brought it into notice, its coal fields are enormous, and some of them contain valuable coking coals. Its agricultural resources are also claimed to be superior to those of any other section of Colorado. Besides this the pine forests which cover the country immediately north of this line for more than 100 miles east and west, with an average depth of from 20 to 50 miles, are a vast store-house of splendid timber, from which Southern Colorado, the Rio Grande Valley, and even Pueblo and Denver can draw for 30 years to come. In view of the rapid demolition of the few forests which the country east of the continental watershed contains, this well timbered region already begins to assume great importance as a source of business to the railway."

The report says, in conclusion: "Although the actual results would have warranted a dividend to the stockholders, it was deemed wiser in view of the large requirements of the line for increased shops, depots and other buildings, tracks, gravel and stone ballast, iron bridges to replace wooden ones, additional lands, etc., not to pay one from the earnings

of last year. A dividend was declared in March, 1881, of 1½ per cent., and was paid April 11.

"At the present date, April 15, 757.8 miles of road are completed, of which 683.9 miles are open for traffic. Before the close of the present year the completed line is expected to exceed 1,000 miles.

"The large ties and 40-pound steel rails for a third rail to carry standard gauge cars between Denver and Pueblo, were contracted for in November and December, and will be laid during this spring and summer.

"For all requirements of the Denver & Rio Grand Railway Company in respect of capital needed for future construction, it is the policy of the company to apply to the stockholders of record at the time of such application, who will have preference for the bonds or stock, or both, as the case may be, in proportion to their holdings."

Housatonic.

This company owns a line from Bridgeport, Conn., to the Massachusetts state line, 74 miles, and it leases the Berkshire road from the state line to West Stockbridge, Mass., 22 miles; the West Stockbridge road, from West Stockbridge to state line, N. Y., 2.75 miles; the Stockbridge & Pittsfield, from Stockbridge to Pittsfield, 22 miles, and the New York, Housatonic & Northern, from Brookfield, Conn., to Danbury, 5.50 miles, making 126.25 miles worked. The report is for the year ending Sept. 30.

Recently the branch from Brookfield to Danbury has been bought from the owners who held it through a foreclosure sale.

The equipment consists of 22 engines; 25 passenger, 2 mail and smoking, and 8 baggage cars; 188 box, 14 hay, 255 flat and 2 caboose cars; 1 wrecking car.

The general accoutn is as follows:

Stock, old		$820,000.00
" preferred		1,180,000.00
Total stock ($27,027 per mile)		$2,000,000.00
Bonds ($11,487 per mile)		850,000.00
Accounts and balances and September expenses		98,908.05
Profit and loss		187,898.23
Total		$3,133,806.28
Road and property ($38,671 per mile)	$2,861,650.13	
Stockbridge & Pittsfield R. R.	5,902.76	
Accounts and balances receivable	82,354.42	
Materials	88,729.51	
Cash	98,070.46	
		3,136,806.28

Cost of property was increased $63,257.89 during the year. There were $148,050 bills payable cleared off. The bonded debt was increased by $300,000 new 5 per cent. bonds, payable 1910. The yearly interest charge is $49,500.

The traffic for the year was as follows:

	1879-80.	1878-79.	Increase.	P. c.
Locomotive miles	526,659	501,526	25,133	5.0
Passengers carried	291,620	252,740	38,880	15.4
Passenger miles	7,325,680	6,340,830	984,850	15.5
Tons freight carried	341,489	225,037	116,452	51.8
Ton miles	17,890,190	12,741,554	5,148,636	40.4

The increase in traffic was very large, especially in freight, and was carried with a very moderate increase of train mileage. Apparently the increase in freight was largely in local business, carried short distances.

The earnings for the year were as follows:

	1879-80.	1878-79.	Inc or Dec.		P. c.
Passage	$204,224.67	$177,543.23	I.	$26,691.44	15.0
Freight and milk	512,375.51	397,681.41	I.	114,694.10	28.8
Mail, etc.	24,387.45	24,435.45	D.	48.00	0.2
Total	$740,997.63	$599,669.09	I.	$141,337.54	23.6
Expenses	493,713.48	349,815.27	I.	143,898.21	41.1
Net earn.	$247,284.15	$249,844.82	D.	$2,560.67	1.0
Gross earn. per mile	5,879.76	4,749.78	I.	1,129.98	23.6
Net earn. per mile	1,958.69	1,978.97	D	20.28	1.0
Per cent. of exps	66.63	58.03	I	8.60	....

Earnings show a marked increase. Expenses include additions to property, a new round-house and increase of terminal facilities at Bridgeport, $30,000; land and new depot at Newtown, $8,400; new masonry at Brookfield, $8,000; two engines and two passenger cars bought and 25 flat cars built, $32,706, making $79,206 in all.

The income account was as follows:

Net earnings		$247,284.15
State tax, etc	$12,409.93	
Rents of leased roads	80,289.58	
Interest paid	44,430.34	
Dividends on preferred stock, 8 per cent.	94,400.00	
		231,529.85
Surplus for the year		$15,754.30
Profit and loss, balance Sept. 30, 1879		172,143.93
Balance, Sept. 30, 1880		$187,898.23

During the year 1,700 tons of steel rails were put in the track, and 1,300 tons have been laid since its close, completing a continuous steel track from Bridgeport to the Massachusetts line. The road bed is in excellent order.

Portland & Ogdensburg.

This company owns a line from Portland, Me. to Fabyan, N. H., 91 miles, and a short line from Scott's Mills, N. H., to Lunenburg, Vt., 3 miles, making 94 miles in all. Its trains run over 20 miles of the Boston, Concord & Montreal track, from Fabyan to Scott's Mills. Its latest report is for the year ending Sept. 30, 1880:

The equipment consists of 8 locomotives; 18 passenger-train cars; 238 freight cars and 3 snow-plows. There were 50 freight cars added during the year.

The general account is as follows:

Stock ($11,513 per mile)		$1,052,185.55
Bonds ($32,638 per mile)		3,068,000.00
Bills and accounts payable		136,085.18
Profit and loss		82,964.53
Total		$4,339,235.26
Cost of property ($44,522 per mile)	$4,185,068.44	
Supplies	27,792.83	
Bills and accounts receivable	99,618.22	
Cash	26,755.77	
		4,339,235.26

The bonded debt was increased $419,000 during the year by settlements with creditors of the company, who held bonds as collateral and took them in payment of the debts.

The traffic for the year was as follows:

Train miles:	1879-80.	1878-79.	Increase.	P. c.
Passenger	140,381	132,640	7,741	5.8
Freight	71,174	57,963	13,211	22.8
Service and switching	33,375	20,299	13,076	65.2
Total	244,930	210,902	34,028	16.2
Passengers carried	94,005	82,514	11,491	13.9
Passenger miles	3,314,655	.....	.....	.....
Tons freight carried	161,300	120,879	40,421	33.4
Ton miles	4,883,618	.....	.....	.....

The average train load last year was 23.61 passengers or 68.59 tons freight; average cars per train, 3.45 passenger or 15.83 freight. The average receipt per passenger per mile was 3.298 cents; per ton per mile, 3.481 cents. Local business furnished 53.7 per cent. of the passenger miles and 60.6 per cent. of the ton miles. The increase in passengers was chiefly from summer travel.

The earnings for the year were as follows:

	1879-80.	1878-79.	Increase.	P. c.
Passengers	$109,153.56	$103,261.01	$5,892.55	5.7
Freight	170,008 89	155,014.97	14,993.92	9.7
Mail, etc	13,406.93	13,217.72	279.21	2.1
Total	$292,659.38	$271,493.70	$21,165.68	7.8
Expenses	189,964.11	179,198.42	10,765.69	6.0
Net earnings	$102,695.27	$92,295.28	$10,399.99	11.3
Gross earn. per mile	3,113.40	2,888.23	225.17	7.8
Net " " "	1,092.50	981.86	110.64	11.3
Per cent. of exps	64.90	66.00	....	.....

Expenses include $6,000 paid for hauling trains over the Boston, Concord & Montreal track.

Besides paying for improvements the company was able to pay $48,000 interest on first-mortgage bonds; $18,720 interest on scrip issued under agreement with bondholders, and $7,184.63 on account of Dalton construction loan.

During the year four miles of track were laid with steel rails, a number of new ties put in, and several bridges rebuilt. Work has steadily been continued filling in the wooden trestles on the road, and several are already finished. At the same time the grades are being reduced where possible, and the cuts widened, the material being used in filling. The Portland yard was enlarged, and the pile bridge to the wharf completed. Several new sidings were built. The embankments along the Ammonoosuc have been rip-rapped with heavy stone, to secure them against freshets.

The road has been operated without accident during the year, and no person on a train was hurt.

Southern Pacific.

This company owns two distinct lines or systems, the Northern Division, consisting of a line from San Francisco to Soledad, 143 miles, with a branch from Carnadero to Tres Pinos, 18 miles, and the Monterey Railroad (nominally leased but really owned), from Castroville to Monterey, 15 miles. This system of 176 miles is worked by the company directly. The Southern Division consists of a line from Goshen, Cal., to Yuma, Arizona, 489 miles, with branches from Goshen to Huron, 40 miles, and from Los Angeles to Wilmington, 22 miles, being 551 miles in all; this division is worked by the Central Pacific Company under lease. The two divisions are to be connected hereafter by a line from Soledad to Lerdo, 160 miles. The following statements have been published for the year ending Dec. 31, 1880:

The company has a land grant of 20 sections per mile, covering about 930 miles of road built or to be built. It also owns the Colorado Steam Navigation Company, whose lines run on the navigable waters of the Colorado River, some 300 miles.

The general account is as follows:

Capital stock		$36,763,900
Funded debt (first-mortgage bonds)		28,872,000
Current accounts		534,458
Other liabilities		135,752
Total		$66,306,110
Cost of road, 712 miles	$61,608,273	
Cost of rolling stock	1,847,404	
Real estate and buildings (exclusive of U. S. land grant and Mission Bay water front in San Francisco)	1,438,206	
Material and fuel on hand	101,972	
Bills receivable	30,000	
Current accounts	869,393	
Cash on hand	203,099	
Profit and loss	207,763	
		66,306,110

The Monterey road was not ready for operation until about the beginning of 1880. The earnings of the Northern Division, operated by the company, were as follows:

	1880.	1879.	Increase.	P. c.
Passage	$425,212	$411,361	$ 13,851	3.4
Freight	541,267	427,992	113,275	26.5
Mail, etc	27,716	25,709	2,007	7.8
Total	$994,195	$865,062	$129,133	14.9
Expenses	551.430	526,565	24,865	4.7
Net earnings	$442,765	$338,497	$104,268	30.8
Gross earn. per mile	5,649	5,385	264	4.9
Net " "	2,516	2,120	396	18.7
Per cent. of expenses	55.48	61.20	.....	....

This division has a very considerable local traffic out of San Francisco to points down the coast, and a good deal of suburban and summer travel.

The income account is as follows:

Net earnings, Northern Division		$442,765
Rental received for Southern Division		1,675,249
Total		$2,118,014
Interest on bonds, etc	$1,741,740	
Rent of Monterey Branch	20,400	
		1,762,140
Surplus for the year		$355,874

The President's statement says: "It is important to know that the portion of the road leased to the Central Pacific Company is being worked at a profit, so that whenever it shall be found advisable to terminate the lease and assume the operation of the entire line independently, this company can do so with a traffic more than sufficient to meet the expenses, interest and sinking fund engagements. * * No new lines have been built during the past year in California, but more recently the Santa Cruz, a local road leading to an important coast resort, has been acquired in this interest, and henceforward will be operated as a feeder to the Southern Pacific. The Arizona and New Mexico extensions of the Southern Pacific Railroad have, however, been vigorously pushed during the year, and from Tucson the road has been carried eastward to Deming, N. M., a distance of 219 miles, where it connects with the road of the Atchison, Topeka & Santa Fe Railroad Company, thus affording a second complete trans-continental route, via Colorado, between the Atlantic and Pacific cities, which new line of travel has, since its opening, March 18 last, contributed greatly to the business on the line to and from San Francisco. From Deming the Southern Pacific has been still further extended in a southeasterly direction to El Paso, Texas, a distance of 88 miles, or a total distance, as the trains run, of 1,285.7 miles from San Francisco. * * * At El Paso, or at some point further southeastward, this El Paso extension will meet and connect with at least two other railroads from the Mississippi Valley—the Texas & Pacific Railway and the Sunset Route, the Galveston, Harrisburg & San Antonio."

Wisconsin Central.

This company owns a line from Stevens Point, Wis., to Ashland, on Lake Superior, 250 miles, with branches from Stevens Point to Portage, 70 miles, and from Menasha to Appleton, 5 miles, making 325 miles owned; it leases the Milwaukee & Northern, from Milwaukee to Stevens Point, 102 miles, with a branch from Hilbert to Green Bay, 27 miles, making 129 miles leased and 454 worked. The Milwaukee & Northern lease includes 9 miles of the Chicago, Milwaukee & St. Paul track out of Milwaukee. The road is worked by trustees for the bondholders pending the completion of an agreement for reorganization. The report is for the year ending Dec. 31.

The report contains no statement of the assets or liabilities of the company. The report made to the Wisconsin Railroad Commissioner, however, gives the following statement of stock and bonds under the readjustment of the company's affairs:

Preferred stock		$2,000,000
Common stock		9,435,500
Total stock		$11,435,500
Preferred bonds	$400,000	
Consolidated-mortgage bonds first issue	3,800,000	
" " " second issue	5,700,000	
		9,900,000
Total stock and bonds		$21,335,500

The consolidated bonds begin to draw interest from July 1 next; the second series receive interest only when earned.

The report of the Agent for the Trustees gives the earnings for the year as follows:

	1880.	1879.	Increase.	P. c.
Passengers	$278,414	$212,192	$66,222	31.2
Freight	815,417	596,544	218,873	36.7
Mails, etc	52,521	42,355	10,166	24.0
Total	$1,146,352	$851,091	$295,261	34.7
Expenses	680,149	497,139	183,010	36.8
Net earnings	$466,203	$353,952	$112,251	31.7
Gross earn. per mile	2,525	1,875	650	34.7
Net " " "	1,027	780	247	31.7
Per cent. of exps	59.35	58.41	0.94	.....

The increase in expenses was due chiefly to repairs of road and equipment.

Payments reported were as follows:

Net earnings, as above	$466,203
Rentals	200,455
Balance	$265,748

The Land Department reports that the total number of acres patented was 577,035. The report of sales in 1880 was as follows:

2,322 acres farming land	$7,437
1,603 acres sandy and marshy land	680
63 town lots	1,487
27,122 M pine stumpage	43,296
Total	$52,900

Total sales to Dec. 31, 1880, were 88,978 acres of land, 563 town lots and 13 block. The total amount of sales and pine stumpage was $471,354. The value of outstanding land contracts, exclusive of interest, on Jan 1, was $30,075.

Mr. Charles L. Colby, Agent for the Trustees, says in his report: "The Wisconsin & Minnesota Railroad was constructed during the past year from Abbotsford (formerly known as Colby Junction, and lying between Dorchester and Colby) to Chippewa Falls. It is about 54 miles in length, and was opened for operation on Nov. 22, 1880. The Chippewa Falls & Western Railway is operated in connection with the Wisconsin & Minnesota Railroad, and practically extends our own line to Eau Claire. From this point, under arrangements with the Chicago, St. Paul, Minneapolis & Omaha Railroad Company, Wisconsin Central cars are now daily run into St. Paul. * * * *

"During the year 1880 many settlers have established themselves on the line of the road. The best government lands have been already taken up, and the demand for our lands is somewhat quickened. We could not advantageously force our lands into the market until those belonging to the United States were first settled and improved. But during the past year much attention has been given to plans for rapid settlement of our railroad lands. * * *

"The Milwaukee and Northern Railway passed into the possession of the Milwaukee and Northern Railroad Company, by foreclosure sale under its first mortgage and bonds, during the spring of 1880. The property itself was again leased to Stewart & Abbot, Trustees, on substantially the same terms as the temporary lease which they had accepted from the Receiver of the road during the period of foreclosure. The present lease to the trustees is terminable upon six months' notice by either party; and although, as trustees, you deemed it proper to decline to consider a more permanent connection, the interests of both parties will probably lead to the continuance of the present arrangement for some time to come. * * * * * *

"The figures given in the accompanying statement cover only the year ending December 31, 1880. Subsequent to that date snowstorms of unusual severity occurred. During March a succession of storms three times blocked all the railroads in Wisconsin which enter into the city of Milwaukee. These storms closed up the Milwaukee and Northern Railroad for nearly a fortnight, and cost us many thousands of dollars to clear the tracks, besides completely stopping all traffic on that part of our line."

Junction & Breakwater.

This company owns a line from Harrington, Del., to Lewes, 40 miles, with a branch from Lewes to Rehoboth Beach, 5 miles. The following statement for 1880 was made at the recent annual meeting.

The earnings for the year were as follows:

Gross earnings ($1,673 per mile	$75,281
Expenses (59.67 per cent.)	44,744
Net earnings ($679 per mile)	$30,537

The net earnings were larger than those of any previous year.

During the year the debt of the company was refunded at 4 per cent., making a saving of about $13,000 in the yearly interest charge. Arrangements have been made for an extension of the Rehoboth Branch.

There are controlled by the same owners and worked in connection with this road the Breakwater & Frankford road from Georgetown, Del., to the Maryland line at Selbyville, 19 miles, and the Worcester road from Selbyville across Worcester County, Md., to Franklin, Va., 36 miles.

The earnings of these lines were as follows:

	Break. & Fr.	Worcester.
Gross earnings	$23,616	$38,581
Expenses	17,819	30,772
Net earnings	$5,797	$7,809
Gross earn. per mile	1,243	1,072
Net " "	305	217
Per cent of expenses	75.49	79.72

Both these lines show a fair increase in earnings. They are all controlled by the Old Dominion Steamship Company, which runs a line from Lewes to New York, carrying a good deal of freight, especially in the fruit season.

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EDITORIAL ANNOUNCEMENTS.

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

NEW WABASH OUTLETS.

The proposed new trunk line from New York to the West is to consist, first of the Central Railroad of New Jersey from New York across New Jersey to Tamanend, Pa., a point on its Lehigh & Susquehanna Division 139 miles from New York and 64 from Easton (where the Delaware is crossed), thence by the Catawissa & Williamsport Branch of the Philadelphia & Reading to the Philadelphia & Erie at Milton, 64 miles; by the last named road to Driftwood, 107 miles; and thence by the Low-Grade Division of the Allegheny Valley road to Red Bank, 110 miles. From Red Bank west the road will have to be built. The distance thence in an air line to Toledo is about 210 miles. The completed portion from New York to Red Bank is 420 miles long, or 24 miles less than the distance by the Pennsylvania Railroad to Pittsburgh, and about the same as the distance by the Erie to Buffalo. Of this 420 miles, 33.1 per cent. belongs to the Central of New Jersey, 15.2 to the Reading, 25.5 to the Philadelphia & Erie, and 26.2 to the Allegheny Valley. The last two roads are controlled by the Pennsylvania, but only the Philadelphia & Erie is worked by it. It pays the whole of the net earnings as rental, but as it owns about $8,000,000 of Philadelphia & Erie stock and bonds, it is benefited by its profits. It controls the Allegheny Valley by owning $1,250,000 of its $2,166,500 of stock, and it also owns $4,000,000 of its $24,000,000 of bonds and about $2,200,000 of its over-due coupons. This road has not earned all the interest on its debt since 1874, and the deficiencies are paid for (by agreement) in new issues of income bonds. Thus a part, not the whole, of the profits made by this line go to the Pennsylvania. It is, by the way, hard to understand why the Pennsylvania Railroad makes so little use of this "Low-Grade Division." It was built at great cost especially to afford an easy line for the immense through freight traffic of the Pennsylvania Railroad, but though completed in the spring in 1874 it has never been used for that traffic, and its business must be trifling. The bonds issued on this division are at the rate of $118,000 per mile, and the yearly interest on them $7,730 per mile, while the gross earnings of the entire road (of which this part must yield least) were but $7,411 and the net earnings but $3,214 per mile in 1880. Of this "Low-Grade" line the directors of the Pennsylvania Railroad Company spoke as follows in their report for 1873:

"The extent of the Western connections and the rapid increase of the local and through tonnage of the Pennsylvania Railroad has not only pressed upon your company the necessity of increasing the facilities of its own line by the laying of additional tracks, without which the traffic of the past year could not have been accommodated, but it has also pointed out the necessity of an additional line across the mountains that separate the waters of the Mississippi Valley from those of the Atlantic, to be built especially for freight, and designed for cheap transportation at slow rates of speed.

"The route adopted for this purpose has been pointed out in previous reports, and the line is now being constructed, with the assistance of this company, by the Allegheny Valley Railroad Company, connecting that company's road, at the mouth of Red Bank Creek, with the Philadelphia & Erie Railroad, at a point 120 miles west of its eastern terminus at Sunbury.

"This line has no gradients against the traffic exceeding a rise of three-tenths in a hundred, or less than 16 ft. in a mile on straight lines—reduced proportionally upon curves. Its route abounds throughout its whole extent with cheap fuel, consisting of varieties of bituminous coal in unusually thick beds, embracing the best coking coals for iron smelting, blacksmith, gas coals and cannel coal—the latter being the most accessible, of that variety, to the Eastern markets.

"This Low-Grade Line is in rapid progress of construction, and will be opened for use this year or early next spring. When completed, and its connections made with the West, it will be possible for freights to be carried at much cheaper rates than they can be conveyed by any of the proposed canals between the Mississippi Valley and the East."

Yet the freight traffic of the Pennsylvania Railroad increased from 1,384,332,000 in this year, 1873, to 2,298,317,000, in 1880—66 per cent.—without having recourse to this easy route, and without crowding the main line so but that it could make room for more, this apparent miracle being effected chiefly by increasing the train loads; for the freight train mileage in 1879 at least was no larger than in 1873. The distance by the "Low-Grade Line" from Pittsburgh to the intersection with the Pennsylvania main line west of Harrisburg is 341 miles, against 241 by the main line, so that a very great advantage in the practicable load on the former would be necessary to counterbalance its greater length of more than 40 per cent.

To return to the new line as described, it extends only to the Allegheny at Red Bank, and as such is about equivalent to the Pennsylvania to Pittsburgh, the Erie and New York Central to Buffalo, and the Baltimore & Ohio to Wheeling or Parkersburg, with the very important difference that as yet there are no connections west of Red Bank. The report says that a new road will be built to Youngstown, O. (about 50 miles), whence arrangements have been made for a connection with the Wabash. We do not understand how this can be. The Wabash can be reached from Youngstown, but only by using the roads of the Pennsylvania or the Lake Shore, or of the New York, Pennsylvania & Ohio and the Lake Shore together. The Pennsylvania can be reached without going so far as Youngstown; and the Lake Shore is not expected to enter an arrangement which will give it a haul less than half as long as what it gets now. If the Pennsylvania took the freight, it would probably interchange at Fort Wayne instead of Toledo. It is quite reasonable to suppose that the Pennsylvania would be willing to prorate on freight from Fort Wayne or Toledo to New York by the proposed route, notwithstanding it could do better to have it go by way of Pittsburgh. As things stand now it gets scarcely any of the Wabash freight. If it can secure a good share of it over half, or less, of the distance between Toledo and New York, it will be nearly all clear gain. But not a word is said of using the Pittsburgh, Fort Wayne & Chicago, or other Pennsylvani road in Ohio. If it were used, the distance from Toledo t New York would be about 725 miles, against 736 by the Lake Shore and New York Central; and from Fort Wayne to New York 785 miles, against 830 by way of Toledo and the Lake Shore.

With a connection completed west of Red Bank this line ought to be a very good one for through shipments. The weak point in most proposed new lines from New York is their inability to get sufficient harbor front and terminal facilities in New York (or Jersey City). For a traffic such as the other trunk lines have, the land, yards, store-houses, elevators, stock yards, etc., needed would cost as much as a railroad 200 miles long or so, and indeed it is now hardly possible to get the land. But the Central of New Jersey has an extensive harbor front, and probably land enough for any traffic the new route may get, though no elevators and insufficient other accommodations for such traffic. Of course, any addition of traffic to engage now unused capacity on this road will be a good thing for it.

It probably puzzles many to understand why, when a new route for Wabash traffic to the East has just been provided by the new line to Detroit and the contract with the Great Western, especially as a new road is being built from Binghamton to Buffalo purposely to receive it, there should be such a movement to open this other route across Pennsylvania. The latter will give a shorter outlet to Baltimore and Philadelphia than the former, but both will compete for the New York traffic.

With these two new lines open (that by Detroit is nearly ready), even if the Wabash itself remains perfectly neutral, there must be a considerable diversion of its traffic from the lines east of Toledo that have hitherto carried it, the Lake Shore and the Canada Southern suffering first and chiefly, and the New York Central perhaps as much, but if so this will at first be for the benefit of the Erie, which will probably get the bulk of the shipments coming from the Great Western, unless they are taken by the longer and more difficult route to Oswego and thence by the Delaware, Lackawanna & Western, which has just been extended to Suspension Bridge. When the New York, Lackawanna & Western is completed, it will probably lessen the Erie's share, if it does not take the great bulk of the Wabash business. In any event roads hitherto carrying this traffic are likely to have much less of it to carry hereafter, and the recent arrangements—such as the negotiations for the line across Pennsylvania, the extension of the Ontario Shore road to Suspension Bridge, and the completion of the line to Detroit and the contract with the Great Western—seem calculated to divide the shipments as much as possible and divert them from the former outlets. The companies likely to suffer most by this we have mentioned. The Pennsylvania, however, seems to gain, because heretofore it has had little of the Wabash traffic. Possibly the Erie may, at first, gain still more, by being substituted for the New York Central east of Buffalo.

The traffic, it must be remembered, though large and valuable, is still not a very large proportion of the business of the roads that now carry it, and even if they lose the whole of it they will not be crippled by any means.

DELAYS OF MERCHANDISE.

The liability and obligation of a railroad company to forward merchandise promptly or answer for damages have been discussed under new aspects in several recent cases. The general nature of the obligation is familiar, and has long been understood. One of the new questions presented has been whether the courts may directly compel the companies to carry, or must confine judicial action to awarding damages for delay or refusal. In the New York Supreme Court the endeavor has been made to establish a sort of compulsion by means of the writ of mandamus. The company in question was the New York, Lake Erie & Western (the late Erie Railway). The applicant for this extraordinary remedy simply stated that he had a quantity of crude petroleum oil at Carrollton, which he desired carried to Weehawhen Docks; that the company had the means of transporting it, and transportation of such oil was a part of its business; and that he had requested it to make the transportation, which it had declined to do. Laws of the state were cited in behalf of the suit declaring it to be the duty of this company among others to carry merchandise at reasonable rates; they did not, however, materially extend the obligation beyond what is understood to be the general rule throughout the country. It is well established that a legal obligation to carry merchandise offered rests upon the companies; and that when, in a special case, there is a refusal, the company has the burden of showing some special excuse. Apparently no adequate excuse was assigned in this instance. The motive is charged to have been a discrimination in favor of the petroleum belonging to other owners, the plaintiff not belonging to the ring or monoply about whose special opportunities and low terms for carriage of oil so much has been said. However this may be, the judge, in deciding the case, said that upon the facts as presented to him the company had violated its obligations toward the owner of the petroleum as a member of the general public desiring to avail himself of the company's facilities. But he did not concur with the plaintiff's lawyer in the idea that a court can assume to "boss" the freight traffic of a road, or undertake the functions of a general freight agent, by issuing writs of mandamus to designate what parcels of goods shall be taken aboard the various trains. He declared that an action for damages was the legal remedy for the refusal. In that action the owner of the goods may recover the difference, less transportation charges, between the value of the property at the place were it lies awaiting carriage and at the place to which the owner wishes it taken. In other words, as the general motive for sending merchandise is to retalize a higher value at a distant place, the law requires

a company refusing to carry to pay the owner the value which he might realize, deducting of course the freight; and it may be that even heavier damages are allowable, on proof that the refusal to carry is wilful and intended to promote a monoply, and destroy plaintiff's business. Thus ample redress is secured for any who may suffer from a refusal to carry. The courts will not attempt to coerce the company into actual performance of the duty.

Excuses for delaying transportation have been considered in two or three instances. In a Maine case a company had received goods from a connecting road to be transported to their owner; but the agents detained them at the place of receipt, under a regulation of the company that goods so received should not be forwarded until a bill of back charges should be furnished. No such bill accompanied the goods. The Court pronounced the excuse insufficient. If the previous company in the connection neglected to send its bill of charges, the omission might indeed prevent the second company from collecting those charges in addition to its own, but it would also excuse it from all duty or liability to the previous company in that regard. The plain duty of the second company was to forward and deliver the goods promptly after receipt. The owner of the goods was not the party in fault for the omission to send the previous company's bill. In a case in Colorado the excuse was that the company needed all its rolling-stock for transportation of passengers. The judge told the jury that it is the duty of a railroad company on receiving freight to carry it without unnecessary delay; that a delay of twenty-four hours at a way station requires some special excuse, and that needing the rolling-stock for passengers is not sufficient. A company is under obligations to carry passengers and to carry freight, and cannot excuse itself for failure to do the one on the ground that it was bound to do the other and could not do both.

In an English "clover seed" case which has attracted considerable attention the question of liability for delay was qualified by a special stipulation in the railroad receipt that the goods were forwarded at a lower rate, and that in consideration thereof they were to go "solely at the risk of the sender," with the exception of loss occasioned by the fraud or theft of the company's servants. Yet the owner of the clover seed, which did not arrive in season to be used during that spring, sued for damages for the delay; and he showed that the delay was caused by the train-hands delivering the seed to the wrong person. The judge said that this casualty was not within the expression "owner's risk." "Risk" looks toward some loss or destruction of the goods, not to mere delay. This is its general meaning, and there was nothing in the railroad receipt exhibited to enlarge it. Therefore the owner of the seed was allowed to recover.

But delays in transportation are not always attributable to neglect on the part of the company. Omission by the consignor to do something necessary on his part before the goods can start, or failure of the consignee to call for and receive them may protract the transit. In these cases the liability of the company is relieved by that very important rule which treats a carrier as warehouseman only. The applications of this rule are frequent and important in modern business; and freight agents and baggagemen will always do well to deal with goods in their charge in such manner as will commence the stringent carrier's liability as late, and terminate it as soon, as may be. According to the monograph note of Mr. Freeman (24 *American Decisions*, 145-160), which is a recent, concise, comprehensive statement of the American law of warehousing, a warehouseman can be charged for loss of goods only in case the loss is attributable to the negligence of him or his servants; and this negligence must, according to many of the decisions—some say otherwise—be proved against him; it is not taken for granted merely because the goods have been lost or destroyed. Now, during any period of time before a company's undertaking to transport has become complete, and during any period after the duty of carriage has been performed, it is entitled to the benefit of the warehouseman's privilgee or exemption. If, for example, goods are brought to the freight room and left there to await future instructions from the shipper as to when and whither they shall be sent, or if, after they have been carried to the further terminus of the road, full opportunity has been given to the consignee to take them, but they lie waiting his call beyond the usual course of business, the general risk of fire, flood, theft, etc., is upon the owner; the company will only be liable if directly in fault for the loss. While the company is in the discharge of the duty of carriage it is deemed liable as a sort of insurer. While its duty is that of safe keeping only, it is chargeable only for the neglect of ordinary precautions to insure safety.

An Ohio "sample-trunk" case illustrates the distinction with reference to passengers' baggage. A salesman traveling to make sales by sample bought a railroad ticket, took a check for his valise and delivered the valise to the baggageman. This valise was packed with valuable samples; nothing, however, was said about these. At about nine o'clock at night the salesman reached the city of his destination, but for reasons best known to himself he did not present his check, choosing rather to leave the valise with the company's agents until morning. Next morning he came for it; when, behold, the warehouse in which the baggage man had stored it for the night had been broken open by burglars, and the valise stolen. The Court said that a salesman is not entitled to carry samples in his trunk in the light of baggage; and that the company was not liable for the valise as carrier. But it did not follow that there was no obligation or duty. By taking charge of the property and placing it in the warehouse for safe keeping the company engaged to take ordinary care of it. If the salesman could show that the loss was attributable to lack of ordinary precautions, he could recover; otherwise not.

Progress in Agriculture and in Production per Individual.

The growth of grain production from 1869 to 1879, as given by the census reports, shows some results such as we recently pointed out for wheat, but more remarkable ones for corn. In this decade the increase in two groups of Western states, five this side of the Mississippi (Ohio, Michigan, Indiana, Illinois and Wisconsin), and six west of it (Minnesota, Iowa, Missouri, Kansas, Nebraska and Dakota), was as follows:

Wheat:	1879.	1869.	Increase.
Cis-Mississippi.....	204,854,000	127,029,000	77,825,000
Trans-Mississippi.....	124,964,000	67,305,000	57,659,000

The gain in the cis-Mississippi states is 61, in the trans-Mississippi states 85 per cent.; but the amount of increase is much the greater in the former, and in the latter year they produced 62 per cent. more wheat than the Western group.

Corn:	1879.	1869.	Increase.
Cis-Mississippi.....	630,344,000	277,637,000	352,707,000
Trans-Mississippi.....	668,192,000	161,608,000	507,584,000

Here the cis-Mississippi states have increased 127 per cent., and the trans-Mississippi states 314 per cent., and in amount as well as percentage of increase the trans-Mississippi states greatly exceed the others (by 155,000,000 bushels). In the cis-Mississippi group, in 1879, 3.08 bushels of corn were grown to one of wheat; in the trans-Mississippi group 5.34 bushels of corn to one of wheat. This shows very clearly what the new states have been devoting themselves to, though two of them, Minnesota and Dakota, are not corn states at all, producing but 17,000,000 bushels of the 668,000,000. In the other four trans-Mississippi states, for every 100 bushels of wheat 746 of corn were produced in 1879. Although they do not yet nearly equal the cis-Mississippi states in wheat production, they exceed them in corn production. Yet these are the states furthest from market, and on this coarse and cheap grain the freights for such great distances (1,100 to 1,700 miles) must often if not generally absorb the larger part of the price at the sea-board. Most of this grain is not marketed, however, but fed on the farms; and probably the larger part of the corn exports and supplies of Eastern consumers comes from this side of the Mississippi still.

The most astonishing feature of the vast increase in grain production in the five states this side of the Mississippi is that it was made with very little increase of the agricultural population. It seems hardly credible that the same force of men should produce 61 per cent. more wheat and 127 per cent. more corn in 1879 than in 1869, but an examination of the statistics of the increase in town and rural population in these states shows that is very nearly true. Putting this in numbers it is saying that a given body of men who produced about 405,000,000 bushels of grain in 1869 produced 835,000,000 bushels in 1879.

Thus in Illinois there was a total increase of 539,000 in population from 1870 to 1880, and 268,000 of that was in towns of more than 5,000 inhabitants, while, owing to the great number of new towns at the stations of the numerous railroads built since 1870, there must have been a very large increase in the population of smaller towns. But even if the whole of the other 271,000 increase is credited to the rural population, that makes an increase of but 13½ per cent., while the state's production of wheat increased 70 per cent., and its corn production 152 per cent. We doubt whether such progress in agriculture was ever made before, and it is simply impossible that the production per individual can continue to increase at this rate. It would appear that the average man was twice as effective in 1880 as in 1870. If there had been any general abandonment of other crops for wheat and corn, that might explain it; but there has not been. Probably fewer cattle are raised for beef in Illinois than formerly; but on the other hand the dairy industry has vastly increased, and so have the many minor farm industries that abound in the vicinity of large cities. And the returns of acres under cultivation made by the county assessors of Illinois show an increase from 10,016,000 acres in 1869 to 12,958,000 in 1879, or 29.4 per cent., and these figures indicate an increase in the average yield per acre in that time from 11.9 to 18.4 bushels of wheat, and from 23.8 to 42 bushels of corn.

These figures are so astonishing that we confess to doubts of the accuracy of the returns of the crops or the acreage. There has, however, certainly been very great progress, and it is this, doubtless, in conjunction with our low freight rates (which are the wonder of the rest of the world), that has enabled us within a few years to increase so enormously our exports.

The Low East-Bound Rates.

Rates on grain have again been reduced five cents per 100 lbs., bringing them down to the basis of 20 cents per 100 lbs., Chicago to New York, which is, we believe, the lowest *regular* rate ever made, though in 1878 and 1879 vast quantities of grain were carried for less—sometimes for as little as 12½ cents per 100 lbs. With expenses as they are now, it is not probable that there is any profit in carrying at 20 cents, though there is probably less loss in carrying at that rate than in lying idle. This, however, was not the alternative. There is not the slightest necessity in the natural conditions of traffic for carrying at so low a rate. Prices of grain and water rates warrant a fair business for some time to come at 30 cents or at least at 25. The reduction, as announced, is made not in order to get a traffic that otherwise would not go by rail, but by reason of cutting of rates by some of the carriers. Probably more grain will be carried by rail at 20 cents than at 30, but not nearly so much profit will be made by the business. Even if we put the cost at no more than 15 cents per 100 lbs., it will require 4,500,000 bushels a week to yield the profit that would have been made at 30 cents on 1,500,000 bushels. The latter can be had on the average, however low lake and canal rates may go. The former quantity was never yet shipped from the Northwestern markets by rail when navigation was open. But as the expense is probably nearer 18 than 15 cents per 100 lbs., the disadvantage of the 20 cent rate is actually much greater. On that basis, it would take 9,000,000 bushels a week to yield a profit equal to that on 1,500,000 bushels at 30 cents.

That the traffic of late has not been so light as to make advisable a decrease of rates to attract it has been sufficiently shown by the record of rail shipments from Chicago. They have been much larger than last year since navigation opened (236,437 in six weeks, against 189,677), and last year was by far the most profitable for through shipments that we have ever had. The aggregate east-bound shipments over the trunk lines we understand to have been exceptionally large of late, exceeded but few times last year before harvest. But as the only freight of importance which the railroads can get more of by reducing the rates is grain, we shall be able to judge best by following the course of the rail shipments of this since navigation opened. Now rail shipments from the reporting Northwestern markets (all of which except Peoria ship by lake or river), for successive weeks since navigation opened have been, for five years:

Week ending—	1877.	1878.	1879.	1880.	1881.
May 7....	1,341,677	1,056,155	2,931,082	1,159,379	1,503,111
" 14....	1,214,861	1,901,939	1,664,849	1,884,501	1,039,250
" 21....	758,450	1,866,111	1,982,501	1,250,589	1,755,217
" 28....	704,342	1,957,051	2,470,084	1,437,857	1,958,493
June 4....	824,902	2,004,090	2,832,298	1,605,114	1,538,657
Five weeks	4,934,242	8,785,346	11,880,814	7,337,400	7,794,728

In 1876, when the railroads first seriously competed with the lake vessels for the grain, the shipments by rail in these five weeks were 10,230,255 bushels. The large rail shipments of the years before 1880 were due to extremely low rates, and the business was universally recognized as unprofitable, though expenses then were less than now. Last year the traffic was vastly more profitable to the railroads than ever before, and it was carried on the basis of a rate of 30 cents per 100 lbs. from Chicago to New York, generally well maintained. This year we see that the rail shipments have been a little larger than last. Nominally they were carried at the same rate, but it was not so well maintained. But at least there has been no such falling off of rail traffic as to cause any anxiety. The lake and canal rates, though lower than their average last year, have been higher than in some previous years, as shown below, where the figures are the rates in cents per bushel from Chicago to Buffalo by lake, and from Buffalo to New York by canal:

Lake: Week to	1876.	1877.	1878.	1879.	1880.	1881.
May 10.....	2¾	3½	2¾	3½	4½	5½
" 17.....	2½	3½	2	3	5¼	5
" 24.....	2¼	3½	2	2¾	6	4
" 31	2¾	3	2	2¼	6¼	5
June 7.....	2½	2½	2¼	2	7	5
" 14	2¾	2½	2¼	2	8	4½
Canal: Week to						
May 10.....	7	7½	6½	5	6	..
" 17.....	6¾	7½	6	4½	6½	..
" 24.....	6½	7½	5½	4½	6	6
" 31.....	6¼	7½	5¼	4½	6	5
June 7	6½	7¾	5½	4¼	6¼	5
" 14.....	6	5	4¾	4¼	7	5

Lake rates thus have been higher than in any of the other years since 1875 except last year, and canal rates higher

than in 1879. In the last week the water rates have had to meet the competition of the 25 cent rail rate, and now they have the further reduction to meet, and of course they will be reduced so as to meet it effectually.

There is then no other good reason for making a 20 cent rate than the cutting of rates by the railroads. They have spoiled their own business for the time by their practices, which it was hoped had been checked. But, as we have often said, the arrangement for maintaining east-bound rates has always been left fatally defective by the neglect to pool the traffic after it leaves the western roads. The struggle for traffic has been kept up by the eastern connections of these roads, and we have the usual lamentable result, so far modified by making the unprofitably low rates regular instead of irregular.

Chicago Shipments Eastward.

The statements of shipments of freight from Chicago which we have been publishing recently were taken from the Chicago papers, which usually publish them the Sunday or Monday following the week which the report covers. We find, now, that these reports are very incorrect, and generally far below the actual shipments. In the last six weeks the newspaper reports have been correct but once, and in the other five have been from 6,500 to 16,500 tons less than the actual shipments. This may be due to the failure to include the shipments from points west of Chicago through that city on through way-bills. The actual shipments through east for six successive weeks have been, in tons:

Week ending—	1881.	1880.
May 7	22,351	27,000
" 14	36,046	24,485
" 21	52,888	29,067
" 28	47,523	34,218
June 4	40,029	32,403
" 11	37,600	42,504
Six weeks	236,437	189,677

This shows larger shipments this year than last every week except the first and the last, and for the six weeks an increase of 46,760 tons, or 24½ per cent. Last year the enormous receipts at Chicago in May were not felt much on shipments until June, when shipments became enormous, averaging for four weeks after the last in the above table 53,300 tons per week. This year May receipts were much lighter, but June receipts are very large; probably they will be felt in the shipments two or three weeks later.

The report of shipments in the Chicago papers for last week gives them as 31,102 tons only, instead of 37,600, and the distribution among the several railroads which they give (31.7 to the Lake Shore, 23.3 to the Michigan Central, 16.3 to the Fort Wayne, 14.4 to the Pan-handle, 8.7 to the Grand Trunk, and 5.6 per cent. to the Baltimore) is also very far from correct. The proportions we cannot give, but understand that the Lake Shore's was much below and the Grand Trunk's much above the percentage allotted in the pool (23 and 10).

We have placed a good deal of stress on these shipments as one of the best indications of the course of Northwestern business and the extent to which the railroads are able to meet lake competition, and we regret to have misstated them. The effect has been to represent the business this year less than it has actually been. There has been, in spite of the terrible winter this year, which obstructed business at Chicago more than at most other places, a very large increase in the rail shipments eastward this year. The amounts in the two years down to June were:

	1881.	1880.	Increase.	P. c.
Tons	1,127,823	960,602	167,221	17.4

This increase is nearly twice as great as the whole amount allotted to the Chicago & Grand Trunk under the pool.

Foreign Railroad Notes.

The Russian government recently built a railroad for military purposes east of the Caspian Sea, through a country of light sand, which is so blown about by the winds that it was prophesied that the road could not be worked, but that the embankments would be blown away and the cuttings filled in a short time. But the Russian engineers hit upon an original plan for protecting the surface of the sand embankments and cuts, which so far has proved effective. They brought the water of the Caspian and the ponds adjoining the road (which is much salter than that of the ocean) in the tanks of tenders, and watered the cuts and road-bed with it. The water evaporating there was left a crust of salt and sand, which is not moved by the wind and protects the loose sand beneath it. Besides, sand fences were built in places, like the snow fences used in Russia, and some rock for ballast was found, with which sand was covered. There have been several great sand storms since the road was built, but trains have never been hindered by them more than two or three hours.

Shortly after the murder of the late Czar, the directors of four Russian railroad companies met together and resolved to found an orphanage in memory of the Czar, at the cost of their roads, contributing 15 rubles per verst, or about $17 per mile, each. This looks very generous; but less so when we learn that every one of these roads receives a large sum from the government yearly to make up a deficit in net earnings, it having guaranteed interest on the capital invested in the roads. So the 15 rubles per verst, which are paid to the orphanage and charged to expenses, will have to be paid back by the government.

The *Journal* of the German Railroad Union of April 29 says:

"If the news appearing in various newspapers is confirmed there is about to be a change in our railroad tariff policy. The contest against the differential rates of the railroads was begun three years ago, it will be remembered, on account of the rates of the sea-ports, whose relatively low import rates seemed to injure German manufactures and agriculture. Now, the Chancellor of the Empire [Bismarck] has become convinced that the railroad rates of the sea-port cities are too high, and therefore do not answer the interests of Germany. He has, according to correspondence from Berlin in provincial papers, addressed a letter to the Minister of Public Works, in which he calls attention to the fact that these rates are too high and desires that the evil be remedied. A conference of the rate-making authorities of the government roads has been held already, whose propositions have been submitted to Minister Maybach. Since reductions of rates for the sea-ports can be made only by way of differential rates, we have, it would appear, arrived at a reversal of our whole system of railroad rates. This probable change, which Prussian rate policy has taken, ought not, however, to be surprising. It is known that the bill for the introduction of uniform rates, prepared in 1870, did not originate with Minister Maybach, and that decided turn the in the direction of a Prussian state railroad system followed directly upon the setting aside of this bill."

During the first quarter of 1881, out of 82 railroads reporting to the German Imperial Railroad Bureau, 58 had smaller earnings than in the corresponding quarter of last year.

On the railroads in the German Empire in February last 138 persons were killed or injured, and 44 cars or locomotives considerably and 107 slightly damaged. Out of 11,035,182 passengers carried, only two were killed and one was injured; but 16 employés were killed and 51 injured.

Within the last three years the construction of 823 miles of railroad in Prussia has been definitely determined upon, of which 621 miles will be government road (300 miles of them "secondary" or light railroads); in that time work was actually begun on 652 miles of these roads, and there were opened for business 1,348 miles (most of it, doubtless, authorized more than three years ago), of which 916 miles were government roads, and 90 miles corporation roads which the government operates.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Attica, Covington & Southern.—Track laid from Attica, Ind., southwest to Covington, 16 miles.

Missouri, Kansas & Texas.—The *Southeastern Extension* has been extended southeast to Mineola, Tex., 15 miles.

Northern Pacific.—The track of the *Pend d'Oreille Division* is extended from Ritzville, Wash. Ter., northeast to Hangman Creek, 62 miles.

St. Louis & San Francisco.—The *Arkansas Division* is extended from Benton, Ark., south by west to Fayetteville, 20 miles.

Wabash, St. Louis & Pacific.—Track is laid on the *Quincy, Missouri & Pacific Branch* from Milan, Mo., westward 10 miles.

Texas & Pacific.—Extended from Big Springs, Tex., westward 29 miles.

Rome, Watertown & Ogdensburg.—The *Lake Ontario Division* is extended from Lewiston, N. Y., south to Suspension Bridge, 6 miles.

Whitefield & Jefferson.—Extended eastward to a new station in Jefferson, N. H., 2 miles.

This is a total of 160 miles of new railroad, making 1,734 miles this year, against 1,613 miles reported at the corresponding time in 1880, 682 miles in 1879, 432 miles in 1878, 583 miles in 1877, 687 miles in 1876, 312 miles in 1875, 570 miles in 1874 and 1,271 miles in 1873. The new railroad reported is now over 100 miles more than at the same time last year.

A TRUNK LINE RAILROAD WAR seems more probable now than before since 1879, when the roads carried at 12 and 15 cents per 100 lbs. from Chicago to New York. The cause was described in our comments last week on the reduction of east-bound rates. There has been at certain points in the West, and in the aggregate east-bound through traffic, a great diversion from the Vanderbilt lines and the New York Central generally, to the advantage of the Erie and its lines, and there is no doubt that this has been largely due to cutting rates, though we believe that the particular line or road making the cuts has not been definitely traced. The result, however, is unmistakable: the New York Central has been losing business, and this it does not purpose to permit. The reduction to 25 cents from Chicago last week probably brought the regular rate down to the level of the cut at that time, but there has been a further cut and a further reduction of the regular rate since, and the condition of things now is such that the roads are not so likely to complain of further cuts, but meet them without reference to the regular rates, so that if rates less than 20 cents are accepted, they will not so soon come to light. It will not be surprising if such lower rates are made, but no cases have yet been reported.

The effect of this will depend chiefly upon the length of time that the low rates last. We have taken occasion recently to show that on some of the most important of the railroads, such as the Lake Shore, the Michigan Central, the whole or nearly the whole of the increase of profits in 1880 over 1879 was due to the maintenance of east-bound rates in 1880; and it is true, not only of these, but of parallel roads, such as the Pennsylvania's lines to Chicago and St. Louis, the Chicago & Grand Trunk, the Wabash's line to St. Louis, and the trunk lines themselves, that for many of them whether they shall be valuable or nearly worthless to their stockholders depends on their getting higher rates on the immense through east-bound traffic than they received previous to 1880. Going back to the rates of 1879 means something worse than going back to the meagre profits (or the losses) of 1879; expenses have so much increased that the effect of such rates now would be much more disastrous, and if long continued would wipe out absolutely the whole of the dividends of some roads whose stocks are now above par. It is therefore right that the whole stockholding interest should regard with great anxiety the prospect of a railroad war, and exercise every effort to secure an early settlement of existing difficulties.

THE MEXICAN RAILWAY COMPANY, whose road extends from Vera Cruz to the City of Mexico, with a branch to Puebla, 293 miles, and which has also a tramway 61¼ miles long from near Vera Cruz to Jalapa, has recently reported for the last half of 1880, showing an increase of 15¼ per cent. in gross and of 17½ per cent. in net earnings. The Jalapa tramway earned but $47,501 (less than $800 per mile), and 7 per cent. less than in the corresponding half of 1879. For the whole year the returns for the railroad proper are:

	1880.	1879.	Increase.	P.c.
Gross earnings	$3,709,908	$3,252,235	$457,673	14.1
Expenses	1,455,508	1,290,884	164,624	12.7
Net earnings	$2,254,400	$1,961,351	$293,049	15.0

The passenger traffic was a very little larger in 1880; the freight traffic was 12.7 per cent. greater. The number of tons hauled (not ton miles) was 201,195 in 1880, against 177,835 in 1879. Nearly the whole increase was in up traffic—toward the city of Mexico, and a very large part of it was in shipments from Vera Cruz. Of the whole freight less than 30 per cent. was down the road, and only 12,242 tons was for exportation. The latter, however, is the largest amount for four years. The city of Mexico, with its 200,000 or 250,000 inhabitants, shipped 3,066 tons of freight for exportation and 7,162 in all. The increase in earnings for 18 weeks of the current half-year is not, as we said a few weeks ago, $80,000, but $400,000, and is due chiefly to the carriage of materials for the new railroads. This is an addition of about 25 per cent., and a notable increase. The Chairman of the company, Mr. R. W. Crawford, at the stockholders' meeting in London, discussed the question whether the increase of traffic will be temporary, but he did not pronounce an opinion on it. Apparently he has not so much faith as some Americans in the possibility of revolutionizing Mexican industry—or rather of creating it—by filling the country with railroads. He thought it was not policy for his company to undertake any new road.

RAIL GRAIN SHIPMENTS FROM ST. LOUIS ELEVATORS, according to the carefully collected statistics of Mr. King, made for his report on the Mississippi River grain movement, have already virtually ceased. There were, it is true, shipments of 8,734,591 bushels of grain from St. Louis over the railroads to the East in 1880, but only 805,430 bushels of that—not an average week's receipts—came from the elevators, and the rest, amounting to 7,929,161 bushels, was transferred in cars from roads which brought it to St. Louis. Meanwhile 15,717,664 bushels were shipped down the river. The inference is that grain once unloaded at St. Louis is virtually lost to the railroads, and so far as it becomes a true grain market—a place where grain is bought and held awaiting customers—the worse it is for them, that is, those of them which carry to the East. It may be said, however, that the 8,000,000 bushels which the roads received in cars from points west of St. Louis had to be carried in competition with the river route; but if this proves anything it is that the expense of transfer at St. Louis on these grain shipments was enough to counterbalance the cheapness of the river route, and that the railroads have a chance and probably the best chance of getting that grain which the consignees are ready to ship to the East as soon as it arrives from the West.

The discrepancy between these figures and those reported under the pool for shipments originating at St. Louis must be due to the shipment of car-loads consigned to St. Louis on new bills of lading to the East without transfer. The reports of shipments from points west of St. Louis directly through that place on through bills of lading show a comparatively trifling movement. Four-fifths of the freight going east from St. Louis is billed from that city—only one-fifth from points beyond.

CANAL TRAFFIC opens well. Down to June 8 the Canal Auditor reports the tonnage of freight cleared, showing an average of 33,605 tons per day for the 21 days that the canal was open this year, against an average of 26,664 tons per day for the 50 days that it was open last year. During the last week of this period, however, a fifth less was shipped this year than last. The articles in which the greatest decrease appears were corn, bituminous coal, iron ore and pig iron. On the other hand there was a large increase in the shipments of manufactured iron; and also in sundry staples of merchandise which the railroads carry most of—such as lard and tallow, and cotton and woolen goods. The staple groceries, sugar, molasses and coffee, which the canal boats take from New York in competition with the railroads, were shipped to the extent of 1,668 tons this year, against 2,035 tons last year. These merchandise freights, however, make but a very small proportion of the whole. The tolls have changed altogether out of proportion to the traffic. For the season the tonnage cleared was 47 per cent. of last year's, the tolls only 37½ per cent., and for the last week, while the shipments were 21 per cent., the tolls were 32 per cent. less than last year.

CHICAGO AND MILWAUKEE GRAIN RECEIPTS, which in May were exceptionally light, have now become exception-

ally heavy, and we have a prospect of a repetition of last year's enormous spring business, but coming three or four weeks later, as we said that it was likely to do. The receipts at Chicago and Milwaukee have been enormously greater in the first two weeks of June this year than in the first two weeks of May, when there was a large decrease from last year. The receipts of grain at the two places for four years have been:

	1878.	1879.	1880.	1881.
May 1 to 14.....	6,440,897	4,893,149	6,310,684	3,338,565
June 1 to 14.....	5,986,101	8,191,309	7,963,812	9,343,346

In May the receipts this year were the smallest for four years, but in June they were the largest for four years. Considering the large increase in flour, the receipts at these places in the first half of June are the largest ever had in two consecutive weeks before harvest, except in the two ending with June 5 last year.

THE COTTON ACREAGE has been reported to the National Cotton Exchange by the several local exchanges, indicating a moderate increase as compared with last year, and, what is remarkable, a larger rate of increase in the old states of South Carolina (6 per cent.) and Georgia (4½ per cent.) than in the newer states of Arkansas (3 per cent.) and Texas (3 per cent.). In North Carolina, Virginia, Florida and Alabama the acreage is about the same as last year; and in Mississippi an increase of only about ½ per cent. is reported; in Louisiana a *decrease* of 0.7 per cent. These estimates seem somewhat crudely made, but probably are not very far from the truth. The cotton plants are probably two weeks later than last year, but as well advanced as in average years. The average condition appears to be not quite so good as at this time last year, which, however, will not prevent a first-rate crop. The crop has yet to meet most of the dangers to which it is liable. A scarcity of labor is reported and generally ascribed to its diversion to railroad construction.

THE SOUTHWESTERN ASSOCIATION was unable to come to agreement at the meeting held last Wednesday with regard either to passenger or freight business, and before adjourning the Rock Island Company is reported to have announced that it would no longer report to the Association, but it is said that there is to be another meeting July 6 to make another effort to agree upon a division. The dissolution of the Association would probably result in the loss of several millions of dollars by the roads concerned, and it seems very improbable that it will be permitted for any considerable length of time. The Association has heretofore been interrupted by desperate railroad wars of several months duration, costing millions of dollars, but it was hoped that the experience of these had been sufficient to prevent their repetition.

The Master Mechanics' Association.

The annual convention of this association opened in Providence, R. I., June 14, with a fair attendance of members. Mr. J. N. Lauder presided, with Mr. Setchel as Secretary.

After the usual opening exercises and the reading of the annual address by Mr. Lauder, the first session was devoted chiefly to the report of the Committee on Boiler Construction and the discussion thereon. Mr. Ralph Wells discussed largely in the report the methods of boiler construction and the manner of riveting joints. Mr. Johann advocated the use of straight-top boilers in preference to the wagon-top form.

On the second day there was an increased attendance. Mr. J. M. Boon reported for the Committee on the Best Means of Producing Combustion of Bituminous Coal in Locomotives. The report says that no general rule can be given. Two things are of vital importance for economical coal-burning—a large fire-box, with plenty of heating surface, and care and intelligence in firemen. Mr. Woodcock, for the Committee on the Best Form of Construction of Locomotives, reported that for express passenger service the American 8-wheel form is the best. The report was made the special order for Thursday. The report of Mr. Sprague, for the Committee on Shop Tools and Machinery, was received and the committee continued.

The President of the Mexican Railway on the New Mexican Railroads.

In his speech to the stockholders at the recent half-yearly meeting of the Mexican Railway Company, Mr. R. W. Crawford, the Chairman, said:

The question enlarges itself into this: Is this large increase of traffic to be regarded as temporary or as having nothing of a permanent nature about it. There are reasons given in the report tending to show that we should rather regard it in some measure as of a temporary character, because we know that the increase has taken place simultaneously with the importation into Vera Cruz of materials for the construction of the numerous lines now going on in Mexico, because we know that those lines will not go on being constructed for an indefinite time, and therefore it would appear as if the profit now received depends on the importation of these materials, and there may be a time when the importation of the materials will cease, and of course the profit will cease at the same time. But I think we may fairly set against that the consideration also stated in the report—namely, the general effect that must be produced on Mexico and Mexican life by the introduction of great railway systems such as the Americans are pushing forward into the country. But we cannot estimate it. We cannot do it by the arithmetical processes I referred to just now; but we can, I think, deal with it in taking general calculations such as you may form by your own calculations. There is, however, this very satisfactory character about it that, whereas Mexico was only very lately a country almost left to itself, because of the great risk and hazard of introducing property in it, or creating property in that country, we ourselves being of late years pretty nearly the only persons of a philanthropic turn of mind who had undertaken to do the Mexican nation some good. Now, when we take all that into consideration, I think we must feel there is something of a very encouraging character in a pushing people like our great neighbors the Americans, who are usually careful in what they do with their money, and are not disposed to enter into enterprises of a great nature if they do not see results to be obtained in some way or another, I cannot help thinking we may congratulate ourselves rather than feel any sort of alarm in witnessing such a great display of American energy and such an outlay of money going on in our neighborhood in Mexico. There are two great lines mentioned in our report, but there is a third line leading from Mexico in a southwest direction, intended eventually to join the city of Mexico with the old historical port of Acapulco. Whatever may be the issue of it, I can only say there is a vast deal of mountainous and rugged country lying between the two, but if they intend to persevere and make it, a good deal more money will be required to be spent upon it. Then there is a fourth undertaking, of which we know little here, but with which is associated the great name of General Grant, late President of the United States. I believe his scheme is to strike a line from the port of Alvarado on the north of Mexico, some distance south of Vera Cruz, and take it across the continent again to the same city of Acapulco. What their views may be of the results likely to come to that company I cannot understand, and it is not my business to do so; but here again is another great outlay of money about to take place, and in Mexico, and all these things must in some way or other tend to our advantage, for there we stand with one end of our line on the central plain of Mexico 8,000 ft. above the sea (and every other line must mount to that level), and the other at Vera Cruz, the only port in the north of Mexico, so that we stand in an incomparable position of safety. Our line cannot be turned by other lines which may be made. There we are, and there, as I have always said, our policy is to keep what we have got, and not to step one foot beyond that line, which is now beginning to pay us a very little.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Saginaw Valley & St. Louis, annual meeting, at the office in Saginaw, Mich., July 13.

Marquette, Houghton & Ontonagon, annual meeting, at the office in Marquette, Mich., July 21, at noon.

East Tennessee, Virginia & Georgia, special meeting, in Knoxville, Tenn., July 29, at noon.

Dividends.

Dividends have been declared as follows:

Boston, Revere Beach & Lynn, 3 per cent., semi-annual, payable July 1.

Chicago & Northwestern, 1¾ per cent., quarterly, on the preferred stock, and 3 per cent. on the common stock, payable June 28. Transfer books close June 16.

Providence & Worcester, 3 per cent., semi-annual, payable July 1.

Pennsylvania Company, 2½ per cent. on the stock, which is all held by the Pennsylvania Railroad Company.

Chicago, St. Paul, Minneapolis & Omaha, 1¾ per cent., quarterly, on the preferred stock, payable July 20.

Fitchburg, 3½ per cent., semi-annual, payable July 1.

Philadelphia, Wilmington & Baltimore, 4 per cent., semi-annual, payable July 1.

Boston & Albany, 2 per cent., quarterly, payable June 30 to stockholders of record May 31.

Lehigh Valley, 1½ per cent., quarterly, payable July 14 to women only; to other stockholders, July 15.

American Society of Civil Engineers.

A dispatch from Montreal, June 15, says: "The thirteenth annual convention of the American Society of Civil Engineers was opened this morning in Molson Hall, of the McGill University Building. On the platform were the Mayor of the city, President of the Harbor Board, Principal Dawson, LL. D. and C. M. G., and other prominent citizens. The Hon. J. Beaudry, the Mayor, extended a hearty welcome in the name and on behalf of his fellow citizens to the members of the convention. Principal Dawson then delivered an address, in which he referred to the objects for which the convention met, and also bade the delegates welcome. Mr. Welch, one of the members, acknowledged the welcome. The convention then proceeded to business."

National Association, General Passenger & Ticket Agents.

The committee of fifteen appointed at the last meeting of the association in New York, to consider and report upon a list of points from which coupon tickets shall be issued, covering the whole country, and also to recommend colors and tints to be used for coupon tickets, held another meeting in Chicago last week, Mr. A. V. H. Carpenter in the chair and Mr. A. E. Little acting as Secretary.

The committee was unable to arrive at any definite conclusion on account of the meagre facts on hand as to the points to which coupon tickets can be issued.

Mr. Little, the Secretary, was instructed to prepare a list of points to which coupon tickets can be issued, and send a copy of the same to all ticket agents in the country and request them to furnish him with a list of points on their respective lines. The list thus prepared by Mr. Little is to be submitted to the next convention of the Association, which will be held at St. Louis in September. The matter in regard to tints and colors of coupon tickets was submitted to a sub-committee of five, consisting of Messrs. Cummings, Wood, Thrall, Daniels, and A. J. Smith.

The sub-committee will meet again just previous to the next convention of the National Association at St. Louis in September.

Southwestern Railway Association.

A dispatch from Chicago, June 15, says: "The managers of the Southwestern Railway pool met here to-day and after debate adjourned. The freight agreement prepared yesterday by the special committee was under consideration the greater part of the day, but no vote was taken, the matter being allowed to drop almost by common consent. Before the adjournment a call was made for the agreement for pooling passenger revenues prepared by the special committee yesterday, as there was a general desire to know what the committee had recommended in relation to the disposition of the thousands of unlimited tickets recently put out by the roads when at war. This much only of the report was read, the recommendation, which originated with Solon Humphreys, of New York, being that unlimited tickets be made good over all roads and that when taken up and returned should be redeemed by the company issuing them at the price at which they were sold to the public. A proposition like the above was made several months ago by the Wabash interest at the New York meeting of the pool. The other roads opposed the recommendation most emphatically, and thereupon the reading of the report was stopped and the meeting broke up. The Wabash interest asked time in which to consider the provisions of the freight agreement; but the other lines were unwilling to concede this, claiming that it could decide then as well as at any other time. The Rock Island road announced that it would no longer report to the present pool, and the meeting adjourned with the understanding that another conference would be held on July 6, to see if a new pooling arrangement cannot be devised."

Railway Employes' Mutual Benefit Association.

The eleventh annual meeting of this Association was held at the Grand Pacific Hotel, Chicago, June 8, the President, Mr. James R. Wood, in the Chair. The Committee on Credentials reported a full attendance of representatives.

Messrs. W. A. V. Porter, C. L. Rising and E. Reynolds were appointed a special committee to revise the constitution and by-laws.

The President's address stated that the Association had lost during the year about 240 members, and gained forty, making a net loss of 200. The deaths numbered seventeen, against twenty-five in the previous year. The expenses decreased $961. The large reduction in numbers is due chiefly to the fact that many had become delinquent in paying up their assessments, and dropped out. The time for payment was limited to 30 days, but was extended to 60 or 90 days during the troubles in 1877, when the roads did not pay salaries promptly. After order was restored it was found impossible to enforce the original rule, and the payments to beneficiaries were much delayed, and the standing of the Association injured. A year ago the 30-day rule was re-established, and the result is that some men have left the Association. This was the eleventh annual meeting, and, all things considered, the President thought the Association had done well. In the eleven years $344,000 had been disbursed in benefits, which sum was collected in about 200 assessments, showing an average of about $1,700 per assessment, for which has been paid individually an average of $18 per year, or 5 cents per day. The address closed with an appeal to the members to work hard for the support of the Association, and to urge railroad men to join it.

Mr. H. B. Maxwell, the Secretary, reported that the total receipts of the year ending June 8 were $25,998, including a balance on hand of $2,559 and death assessments amounting to $20,883. The disbursements were $22,291, and the expenses $2,307, leaving in the treasury $1,399.

The report of the Executive Committee estimated that the expenses of the ensuing year would be $2,464.

After electing officers for the ensuing year, it was resolved to hold the next meeting in Chicago on the second Wednesday in June, 1882.

The Committee on Constitution and By-Laws reported that the name of the Association could be legally changed without necessitating the reissuing of existing policies, and without a new incorporation; and recommended that it be changed to the Railway Employés' Mutual Benefit Association, leaving out "of the West." They also recommended that the by-laws and constitution be changed in accordance therewith. The report was adopted and referred to the Executive Committee, who are to make the necessary changes.

Sec. 28 of the by-laws was amended so that the time for paying an assessment after notice thereof has been given shall read 45 days instead of 30, as heretofore.

The Committee appointed to draft a resolution relating to the classification of members reported that the board of directors be empowered to organize Class B, in which members of Class A may be admitted, retaining membership in each, on furnishing a proper medical certificate, the fee for Class B being $7. The age is limited to not over 45 years. Any present member may be admitted to the new class on producing a satisfactory medical certificate. The resolutions were ordered spread on the records for one year, to be acted upon at the next annual meeting.

The Committee also recommended that Sec. 24 be amended next year in order to accord with the above classification.

The Convention, after extending thanks to the hotel and press, adjourned.

ELECTIONS AND APPOINTMENTS.

Albert County.—At the annual meeting in Hillsboro, N. B., June 7, the following directors were chosen: R. T. Clinch, A. E. Killam, George McKean, Martin B. Palmer, J. A. Wheaton.

American Society of Civil Engineers.—Additions noted in the April *Transactions* (just published) are: Members, Truman H. Aldrich, Montevallo Coal Mines, Montevallo, Ala.; Geo. P. Bland (promoted from Junior), No. 3,214 Woodland avenue, West Philadelphia, Pa.; Charles R. Boyd, Wytheville, Va.; and Sidney F. Lewis, Assistant State Engineer, No. 289 Royal street, New Orleans; Associates, Arba R. Hancock, No. 410 East Fourteenth street, New York; Juniors, Edward Butts, Assistant Engineer, Kansas Pacific Railway, Erie, Col.; Charles A. Ferry, Assistant City Engineer, New Haven, Conn.; and Charles J. Poetsch, Assistant City Engineer, Milwaukee, Wis.

Baltimore & Drum Point.—At the annual meeting recently the following were chosen: President, Augustus Albert; directors, Andrew Banks, Wm. H. Bians, John G. Butler, Thomas S. Iglehart, Benjamin King, H. E. Morton, Henry Owings, Samuel Remington, P. V. Rogers, J. R. Shunk, J. A. Stuart; Secretary, John G. Butler; Treasurer, Andrew Banks. Office in Baltimore.

Bangor & Katahdin.—The directors of this new company are: Egerton R. Burpee, Owen W. Davis, Jr., Thomas M. Egery, Eugene M. Hersey, Franklin A. Wilson. Office in Bangor, Maine.

Canada & Atlantic.—The officers recently chosen by this company are: President, E. McGillivray; Vice-President, Archibald McNab; Secretary and Treasurer, Edward H. Tiffany.

Central Iowa.—Mr. Charles E. Mallory has been appointed Car Accountant, with office at Marshalltown, Iowa.

Chicago, St. Paul, Minneapolis & Omaha.—A circular from this company, after announcing the final transfer of the St. Paul & Sioux City lines to the company, says:

"All business pertaining to the Operating Department will be in charge of C. F. Hatch, General Superintendent, who will designate his assistants.

"All business pertaining to the Traffic Department will be in charge of F. B. Clarke, General Traffic Manager, who designate his assistants.

"Mr. C. W. Johnson is hereby appointed Chief Engineer of the entire road, with authority to designate his assistants.

"The office of General Manager, vacant since the resignation of Gen. J. W. Bishop, is hereby abolished.

"Mr. E. W. Winter is hereby appointed Assistant President."

Mr. J. A. Munroe has been appointed General Agent in charge of the commercial business of the Nebraska Division, with office at Omaha, Neb.

Chicago & Western Indiana.—At the annual meeting in Chicago, June 7, the following directors were chosen: A. Crawford, J. B. Brown, Roswell Miller, C. P. Sanger, J. F. Torrence. The board elected J. B. Brown President; H. W. Chester, Secretary.

Cincinnati, Hamilton & Dayton.—At the annual meeting in Cincinnati, June 14, the following directors were chosen: Martin Bare, John Carlisle, L. B. Harrison, H. D. Huntington, M. E. Ingalls, M. M. White, Cincinnati; Stevenson Burke, J. H. Devereux, Cleveland, O.; Hugh J. Jewett, New

York. The only new director is Mr. Jewett, who succeeds H. B. Hurlbut. The board re-elected J. H. Devereux President; John Carlisle, Vice-President; F. H. Short, Secretary and Treasurer and Assistant to the President; Lewis Williams, General Manager.

Cincinnati Northern.—Mr. M. A. McLaughlin has been appointed Auditor and General Freight and Passenger Agent.

Erie & Western Transportation Co.—This company recently elected Frederick J. Firth President; A. D. Hepburn, Secretary; James S. Wentz, Treasurer.

Evansville, Seymour & Bellefontaine.—The directors of this company as consolidated are: A. W. Carpenter, R. Pattison, Evansville, Ind.; H. C. Kimble, Brookville, Ind.; C. B. Cole, E. G. Devore, Seymour, Ind.; I. N. Bette, Chicago; Malcolm Peters, Philadelphia; Henry B. Hammond, Charles W. Kohlsaat, New York.

Flint & Pere Marquette.—Mr. Sanford Keeler, heretofore Superintendent, will hereafter have the title of General Superintendent. Mr. W. F. Potter is appointed Superintendent Eastern Division, and Mr. V. Meredith Superintendent Western Division.

Mr. David Edwards, heretofore General Freight Agent, is appointed General Traffic Manager. Mr. W. J. Duddleson is appointed Assistant Freight Manager.

Gainesville & Dahlonega.—At the annual meeting, held June 8, the following were chosen: President, W. P. Price, Gainesville, Ga.; directors, A. D. Candler, R. E. Green, C. A. Lilly, H. J. Long, P. Palmour, C. A. Sanders, Gainesville, Ga.; B. W. Davis, Auraria, Ga.; F. W. Hall, N. F. Howard, Dahlonega, Ga.; E. Bast, Ashland, Pa.

Green Bay, Winona & St. Paul.—The directors of this company, successor to the Green Bay & Minnesota, have chosen officers as follows: Samuel Sloan, President; Timothy Case, Vice-President, General Superintendent and Assistant Treasurer; Theodore Stanges, Secretary and Treasurer.

Indiana & Michigan.—The directors of this new company are: John W. Chaplin, Henry H. Getty, George C. Kimball, Andrew M. Nichols, Frederick A. Nims, Hugh Park, Oliver P. Pillsbury. Office at La Crosse, La Porte County, Indiana.

Junction & Breakwater.—This company has re-elected N. L. McCready President; W. T. Vaules, Secretary; David H. Houston, Treasurer.

Lake Shore & Michigan Southern.—Mr. N. P. Smith, late Train-Master, is appointed Assistant Superintendent of the Buffalo & Erie Division.

Milwaukee, Lake Shore & Western.—At the annual meeting in Milwaukee, June 9, the following directors were chosen: C. Guling, Joseph Vilas, Manitowoc, Wis.; Joseph Mead, Sheboygan, Wis.; Daniel Parrish, Philadelphia; Charles Dana, Wm. H. Guion, Henry B. Hammond, W. K. Hinman, Adam Norrie, Gordon Norrie, F. W. Rhinelander, S. S. Sands, F. F. Thomson, New York. The only new director is Mr. Thomson, who succeeds Mr. M. K. Jesup.

Missouri, Kansas & Texas.—The new board has elected Jay Gould President; R. S. Hayes, First Vice-President; N. L. McCready, Second Vice-President; H. B. Henson, Secretary and Treasurer; Jay Gould, Russell Sage, Sidney Dillon, Samuel Sloan, George J. Forrest, Wm. Bond and A. G. Dulman, Executive Committee.

Mobile & Ohio.—Mr. Henry Tacon has been chosen Secretary and Treasurer, in place of A. L. Willoughby, resigned. Mr. George Layet has been appointed Auditor, in place of S. H. Edgar, resigned.

National Car Co.—At the annual meeting in St. Albans, Vt., June 8, the following officers were chosen: President, Lansing Millis; directors, Herbert Brainerd, Gilman Cheney, J. D. Hatch, H. R. James, J. R. Langdon, M. H. Stanton; Secretary and Treasurer, F. Stewart Stranahan; Auditor, J. D. Hatch.

Nevada Central.—At the annual meeting recently the following directors were chosen: Lyman Bridges, S. H. H. Clarke, Josephus Collett, A. W. Curtis, Sidney Dillon, F. W. Dunn, J. H. Kincade, J. M. Ham, T. E. Sickles. The board elected S. H. H. Clarke President; Sidney Dillon, Vice-President. The road is now controlled by the Union Pacific.

Newport & Maysville.—The directors as recently chosen are: M. E. Ingalls, Alexander Swift, John Bevan, Cincinnati; John Echols, Maysville, Ky.; Ely Ensign, D. W. Emmonds, J. H. O'Fay, Huntington, W. Va. A majority of the board are in the Chesapeake & Ohio interest.

New York, Susquehanna & Western.—The officers of this company, formed by the consolidation of the Midland of New Jersey and its extensions are: President, Frederick A. Potts; First Vice-President, W. S. Dunn; Second Vice-President, Garrett A. Hobart; Secretary and Treasurer, Albert L. Lee.

Northern Pacific.—At a meeting of the board held June 9, Mr. Henry Villard was chosen a director. The board then elected Ashbel H. Barney, President *pro tem.*, in place of Frederick Billings, resigned; T. F. Oakes, First Vice-President; James B. Williams, Second Vice-President. The vice-presidencies are new offices.

Owensboro & Nashville.—This company elected the following directors June 7: J. W. Thomas, Nashville, Tenn.; E. P. Alexander, R. S. Bevier, H. W. Bruce, F. de Funiak, Henry C. Murrell, A. M. Quarrier, Louisville, Ky. The road is worked by the Louisville & Nashville Company.

Pennsylvania.—In accordance with the revised organization, the title of the Engineer of Maintenance of Way is changed to Chief Engineer from June 1.

Chief Engineer Wm. H. Brown announces the appointment of Robert E. Pettit and John C. Wilson as assistants to the Chief Engineer, to date from June 1.

Pennsylvania Company.—At the annual meeting in Pittsburgh, June 7, the following directors were chosen: W. H. Barnes, J. N. McCullough, Thomas D. Messler, Wm. Thaw, Pittsburgh; A. J. Cassatt, J. N. DuBarry, S. M. Felton, John P. Green, H. H. Houston, Wistar Morris, H. M. Phillips, George B. Roberts, John Price Wetherill, Philadelphia. The board elected George B. Roberts, President; J. N. McCullough, First Vice-President; Wm. Thaw, Second Vice-President; Thomas D. Messler, Third Vice-President, Comptroller and Secretary; Stephen W. White, Assistant Secretary; W. H. Barnes, Treasurer.

Railroad Employés' Mutual Benefit Association.—At the annual meeting in Chicago, June 8, the following officers were chosen: President, James R. Wood; Vice-President, C. L. Rising; Directors, Frank Bagg, C. H. Davie, Frank White, regular term; N. P. Frailey to fill unexpired term of Mr. Rising. The board elected H. B. Maxwell Secretary; Alexander Mackay, Treasuter.

St. Louis, Alton & Terre Haute.—At the annual meeting in St. Louis, June 6, the following directors (one-third of the board) were chosen for three years: Wm. B. Brown, W. Bayard Cutting, Charles G. Landon, H. C. Stimson, Wm. A. Wheelock. Messrs. Brown and Stimson are new directors, succeeding J. M. Burke and Thomas Denny.

St. Louis, Texas & Gulf.—The officers of this new company are: President, Brad. Barner, Longview, Tex.; Vice-President, N. R. Easton, New York; Secretary and Treasurer, Samuel Cundiff, Longview, Tex.

Southern Maryland.—At the annual meeting, June 8, the following directors were chosen: J. Van Riswick, Frank Hume, T. A. Lambert, L. G. Hine, J. L. Barbour, Commodore W. W. W. Wood, Washington; J. H. Linville, Philadelphia; John P. Poe, Baltimore; Edward Wheaton, Providence, R. I. The appointment of J. M. Broom, John G. Chapman and Robert K. Elliott as Maryland state directors was announced. The board elected John Van Riswick, President; J. H. Linville, Vice-President; Frank Hume, Secretary and Treasurer.

Tamaroa, Mt. Vernon & Vincennes.—The directors of this new company are: Alvah Blanchard, Tamaroa, Ill.; George A. Evans, Robert A. D. Wilbanks, Mt. Vernon, Ill.; J. W. K. Murphy, Pinckney, Ill.; Charles B. Cole, Chester, Ill.

Texas & Pacific.—Mr. R. S. Hayes has been chosen Vice-President, in place of Frank S. Bond, resigned. Mr. Hayes has been for many years on the International & Great Northern, as Assistant and Chief Engineer, Vice-President and President.

Toledo, Cincinnati & St. Louis.—The following appointments have been made: E. V. Springer, Auditor Construction Department; W. F. Wiles, Auditor Operating Department and Acting General Freight and Passenger Agent; W. F. Aiken, Paymaster; C. Harris, Superintendent of Construction Western Division.

Vicksburg & Meridian.—The board of directors have chosen George Arents President; Frederick Wolffe, Vice-President; John Scott, General Manager. Mr. Arents represents the bondholders; Messrs. Wolffe and Scott the owners of the Alabama Great Southern.

Vicksburg, Shreveport & Pacific.—This company has been reorganized by the election of the following directors: E. R. Bacon, D. Graff, Charles E. Lewis, Frederick Miller, Otto Plock, E. Richardson, John Scott, George C. Waddell, Frederick Wolffe. The board elected Otto Plock President; John Scott, Vice-President and General Manager; D. Graff, Secretary. Mr. Scott is General Manager of the Alabama Great Southern.

Yard-Masters' Mutual Benefit Association.—At the annual meeting in Milwaukee, June 8, the following officers were chosen: President, G. W. Evans, Denver, Col.; First Vice-President, J. H. Washburn, Concord, N. H.; Second Vice-President, J. Davis, Cleveland, O.; Recording Secretary and Treasurer, Joseph Fangra, Indianapolis, Ind.; Corresponding Secretary, C. N. Edmonds, Bloomington, Ill.

PERSONAL.

—Mr. S. H. Edgar, Auditor of the Mobile & Ohio, has resigned his position.

—Mr. A. L. Willoughby has resigned his position as Secretary and Treasurer of the Mobile & Ohio Company.

—Mr. E. S. Bowen, General Superintendent of the New York, Lake Erie & Western Railroad, sailed for Europe on the City of Richmond last Wednesday, for a short vacation.

—Mr. J. E. Wiggin, Master Mechanic of the Houston, East & West Texas road, has resigned and has accepted a position on the Hannibal & St. Joseph road at Brookfield, Mo.

—Mr. H. W. Sibley, President of the Atlanta & Charlotte Air Line, was presented with a valuable silver pitcher, suitably inscribed, by the officers of the road, last week in Atlanta.

—Mr. Frank S. Bond has resigned his office as Vice-President of the Texas & Pacific Company, in order to give full attention to his business as President of the Philadelphia & Reading.

—Mr. John Christiansen has resigned his position as Mechanical Engineer of the Chicago, Burlington & Quincy road, to take charge of a large car-wheel foundry now under erection at Pullman, near Chicago.

—Mr. George Stephen, President of the St. Paul, Minneapolis & Manitoba Company, has retired from his position as President of the Bank of Montreal, in order to give his whole time to his railroad business.

—Mr. Leonard Phleger, who died recently in Philadelphia, was at one time Master Mechanic of the Philadelphia, Wilmington & Baltimore road, and afterwards had charge of the Philadelphia & Reading shops in Reading. He was the inventor of the Phleger coal-burning locomotive boiler, now almost forgotten, but which caused some controversy in its day.

—Ex-President Franklin B. Gowen, at the invitation of a number of friends in Philadelphia and its vicinity, has agreed to deliver a public address upon "The position which the city of Philadelphia should occupy to the great Commonwealth of which she is part, to its transportation lines and to the railway problem of the day." The address was to be delivered on the evening of June 16, at the Academy of Music in Philadelphia.

TRAFFIC AND EARNINGS.

Coal Movement.

Coal tonnages for the week ending June 4 are reported as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Anthracite	597,628	374,618	I. 223,010	59.5
Semi-bituminous	98,741	104,718	D. 5,977	5.7
Bituminous, Penna	48,527	63.079	D. 14,552	23.1
Coke, Penna.	49,999	35,018	I. 14,981	42.8

The anthracite companies having again settled on the plan of suspending production for half of each week, the opponents or that plan are by no means satisfied, but will try to secure a total stoppage for two weeks either in the last half of July or in August.

Chicago coal receipts for the five months ending May 31 were as follows:

	Anthracite.		Bituminous.	
	1881.	1880.	1881.	1880.
By rail	233,420	169,601	840,204	682,758
By lake	49,284	91.431	45,968	48,962
Total	282,704	261,032	886,172	731,720

Total receipts of all kinds were: 1881, 1,168,876; 1880, 992,792; increase, 176,084 tons, or 17.7 per cent. Shipments by railroad and lake were 244,113 tons in 1881, against 237,525 tons last year.

Railroad Earnings.

Earnings for various periods are reported as follows:

	1881.	1880.	Inc. or Dec.	P. c.
Five months ending May 31:				
Ala. Gt. Southern	$292,887	$245,145	I. $47,742	19.5
Bur., Cedar Rap. & No.	791,121	828,969	D. 37,848	4.6
Central Pacific	8,708,763	6,779,742	I. 1,929,021	28.4
Ches. & Ohio	1,051,452	1,034,782	I. 16,670	1.6
Chi. & N. W.	6,720,956	6,818,221	D. 97,265	1.4
Chi., St. P., Minn & Om., Eastern Div.	783,119	578,294	I. 204,825	35.4
St P. & S. C. Div.	455,915	539,750	D. 83,835	15.5
Cin., Ind., St. L. & Chi.	879,930	883,456	D. 3,526	0.4
Cin. & Springf.	388,367	355,177	I. 33,190	9.4
Cleve., Col., Cin & Ind.	1,601,360	1,561,515	I. 39,845	2.6
Ill. Cent., Ill. Lines.	2,317,113	2,351,561	D. 34,448	1.5
Iowa lines	581,538	670,738	D. 89,200	13.3
Ind., Dec. & Spr.	181,994	123,274	I. 58,720	47.7
Lake Erie & West	487,600	349,405	I. 138,195	39.6
Mem. & Charleston.	495,949	439,633	I. 56,316	12.8
Mil., Lake Sh. & W.	192,791	152,735	I. 40,056	26.2
Nash., Chat. & St. L.	923,675	880,541	I. 43,134	4.9
N. Y. & New Eng.	1,003,522	861,374	I. 142,148	16.5
Norfolk & Western.	832,402	768,750	I. 63,652	8.3
Peoria, Dec. & Ev.	225,736	133,349	I. 92,387	69.5
St. L., A. & T. H., Main Line	607,823	523,709	I. 84,114	16.5
Belleville Line	294,123	265,551	I. 28,572	10.7
Scioto Valley	126,821	113,388	I. 13,433	11.9
Wabash St. L. & P.	4,918,273	5,202,511	D. 284,238	5.5
Four months ending April 30:				
Boston & N. Y. Air Line	$86,205	$88,240	D. $2,035	2.3
Net earnings	38,923	40,205	D. 1,283	3.2
Bur., Cedar Rap. & No.	625,491	679,465	D. 53,974	7.9
Net earnings	136,782	244,168	D. 107,386	44.0
Cleve., Mt. Ver. & Del.	133,095	141,889	D. 8,794	6.2
Net earnings	19,340	37,818	D. 18,478	48.6
Des Moines & Ft. Dodge	98,603	83,199	I. 15,404	18.6
Net earnings	18,861	37,783	D. 18,922	49.8
Louisv. & Nashv.	3,425,309	2,425,967	I. 999,342	41.2
Net earnings	1,135,019	989,437	I. 145,582	14.7
Maine Central	550,475	516,985	I. 33,490	7.6
Net earnings	169,812	148,940	I. 20,872	14.0
Mem., Pad. & No	76,839	68,104	I. 8,735	12.8
Net earnings	9,854	9,531	I. 323	3.4
St. L., Iron Mt. & So.	2,382,052	1,905,979	I. 476,073	25.0
Net earnings	703,433	680,273	I. 26,160	3.8
Month of March:				
Col., Chi. & Ind. Cent.	$457,704	.....	.....	....
Net earnings	64,166	.....	.....	....
Month of May:				
Ala. Gt. So.	$52,307	$45,344	I. $6,963	15.5
Bur., C. Rap. & No.	165,630	149,504	I. 16,126	10.7
Central Pacific	2,068,000	1,778,447	I. 289,553	16.3
Ches. & Ohio	248,699	199,444	I. 49,255	24.7
Chi. & N. W.	1,863,676	1,875,608	D. 11,932	0.6
Chi St. P., Minn. & Omaha, East Div.	167,199	115,794	I. 51,405	44.3
St. P. & G. C. Div.	142,595	116,352	I. 26,243	22.6
Cin., Ind., St. L. & Chi.	186,995	188,804	D. 1,809	0.9
Cin. & Springfield	83,802	73,981	I. 9,821	13.3
Cleve., Col. Cin. & Ind.	338,423	314,636	I. 23,787	7.6
Gal., Har. & San Antonio	80,037	78,617	I. 1,420	1.8
Ill Cen., Ill Lines	499,200	524,739	D. 25,539	4.9
Iowa Lines	137,670	140,381	D. 2,711	1.9
Ind., Dec. & Spring.	35,123	26,314	I. 8,800	33.8
Lake Erie & West.	100,367	87,630	I. 12,737	14.5
Mem. & Charleston.	74,007	58,026	I. 15,981	27.6
Mil., Lake Sh. & W.	44,557	26,532	I. 18,025	68.0
Nash., Chat. & St. L	163,430	158,830	I. 4,600	2.9
N. Y. & New Eng.	215,271	183,701	I. 31,570	17.2
Norfolk & Western.	145,202	131,407	I. 13,795	10.5
Peoria, Dec. & Ev.	51,623	35,081	I. 16,542	47.3
St. L., A. & T. H., Main Line	118,226	95,847	I. 22,379	23.3
Belleville Line	45,059	52,081	D. 7,022	13.5
Scioto Valley	26,969	22,648	I. 4,321	18.8
Union Pacific	2,393,237	2,067,269	I. 325,968	15.7
Wabash, St. L. & P.	1,144,661	1,122,706	I. 21,955	1.9
Three weeks in May:				
Minn. & St. Louis	$59,167	$31,347	I. $27,820	89.7
First week in June:				
Bur., Cedar Rap. & No.	$44,430	$36,498	I. $7,932	21.8
Hann. & St. Jo.	46,559	41,783	I. 4,776	11.4
Houston & Tex. Cent.	48,647	44,034	I. 4,613	10.5
Int. & Gt. Northern.	35,327	20,388	I. 14,939	73.2
Louisv. & Nashville.	195,100	158,600	I. 36,500	23.0
Mo., Kan. & Texas	94,639	60.576	I. 34,063	55.9
Mo. Pacific	137,486	87,924	I. 49,562	56.2
Northern Pacific	85,264	58,058	I. 27 206	46.9
St. L., Iron Mt. & So.	121,900	93,888	I. 28,012	29.8
St. L. & San Fran.	63,600	42,500	I. 21,100	49.6
Week ending June 4:				
Chicago & Gd. Trunk	$31,651	$19,890	I. $11,761	58.6

Grain Movement.

For the week ending June 4 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Year.	Northwestern receipts.	Northwestern shipments. Total.	By rail.	P. c. by rail.	Atlantic receipts.
1874	3,785,257	3,897,590	1,083,705	27.8	4,878,691
1875	2,108,200	2,692,067	852,903	31.7	3,002,150
1876	6,094,854	5,042,385	2,147,670	42.6	4,973,426
1877	2,215,000	2,783,325	624,387	22.4	3,294,502
1878	3,591,073	4,542,030	1,169,514	24.8	5,898,607
1879	6,524,578	6,781,520	3,008,164	44.4	7,042,545
1880	8,108,171	7,289,142	1,684,205	23.2	6,790,016
1881	8,085,234	4,936,720	1,538,657	31.2	6,719,365

The receipts of the Northwestern markets were very nearly as large as in the corresponding week of last year, and immensely greater than in any previous week this year (40 per cent. more than the week before). The shipments of these markets were unaccountably small, and much smaller than in the two weeks next preceding. Their rail shipments were 21⅓ per cent. less than the week before. The Atlantic receipts were nearly the same as in the week previous and the corresponding week of last year.

Of the Northwestern receipts Chicago had 51.7 per cent., St. Louis 16.4, Toledo 10.8, Milwaukee 8.7, Peoria 8.6, Detroit 2.3, and Cleveland 1.5 per cent. Compared with the previous week there is an increase everywhere, but by far the greater part of it is at Chicago. With an increase of 2,305,000 bushels in the aggregate, Chicago had a gain of 1,419,000 bushels, Milwaukee 310,000, Toledo 264,000, and St. Louis 54,000. The lake ports thus gain much more than St. Louis, which, however, maintains large receipts this year—nearly twice as great as it had last year at this time.

Of the Atlantic receipts, New York had 34.6 per cent., Philadelphia 18.4, Baltimore 17.4, New Orleans 14.2, Montreal 8.4, Boston 6.7 and Portland 0.3 per cent. Compared with the previous week, there was a great decrease at New York and a great increase at New Orleans. The latter city has but once before this year and but twice before in its history received so much grain in a week. Montreal's receipts were much the largest of the year, and were exceeded

but twice before harvest last year. Philadelphia's receipts are the largest of the year; Baltimore's have been exceeded in but two previous weeks of the year.

Exports from Atlantic ports for five consecutive weeks have been:

	Week ending				
	June 8.	June 1.	May 25.	May 18.	May 11.
Flour, bbls.	89,679	.....	.....	.....	.....
Grain, bu.	4,531,310	5,949,131	3,280,568	3,114,802	3,371,309

Receipts and shipments at Chicago and Milwaukee for the week ending June 10 were:

	Receipts.		Shipments.	
	1881.	1880.	1881.	1880.
Chicago	4,133,829	3,475,761	3,761,002	4,583,687
Milwaukee	636,384	313,078	394,526	1,105,267

Thus the receipts at Chicago were 19 per cent. and at Milwaukee 104 per cent. greater this year than last, while the shipments were 18 per cent. *less* at Chicago and 64 per cent. less at Milwaukee. These ports are now making up for their comparatively light receipts in May.

Receipts and shipments at Buffalo for the same week ending June 10 were:

	Receipts.		Shipments.	
	1881.	1880.	1881.	1880.
By water	1,896,500	3,956,200	2,016,400	2,665,950
By rail	467,600	833,400	1,168,600	1,450,900
Total	2,364,100	4,789,600	3,185,000	4,116,850

There is a decrease of 49½ per cent. in lake receipts, of 44 per cent. in rail receipts, of 24½ per cent. in canal shipments, and of 19 per cent. in rail shipments.

At four eastern ports receipts were, for the same week ending June 10:

	New York.	Boston.	Philadelphia.	Baltimore.
1881	2,993,214	597,400	680,200	815,942
1880	3,555,445	421,925	1,463,900	651,475

Of the New York receipts 858,832 bushels (28.6 per cent.) this year and 1,434,990 bushels (40.3 per cent.) last year were by rail. The total receipts at New York this year were nearly 50 per cent. more than the aggregate receipts of the three other ports, but its *rail* receipts were but two-fifths of theirs.

Exports of Oregon flour and wheat during May were 422,123 bushels of wheat and 56,243 barrels of flour; total, reducing flour to wheat, 703,338 bushels. All the exports were to Great Britain except a few small shipments of flour to British Columbia.

San Francisco wheat exports in May were 1,130,213 bushels. For the eleven months of the California crop year from July 1 to May 31 the exports were as follows, flour reduced to wheat in the totals:

	1880-81.	1879-80.	Increase.	P. c.
Flour bbls.	581,777	454,757	127,020	27.9
Wheat, bush.	20,992,922	17,287,992	3,704,930	21.0
Total, bush.	23,901,807	19,561,777	4,340,030	22.2

Nearly all the wheat went to Great Britain. About 40 per cent. of the flour went to Great Britain and 35 per cent. to China.

Shipments of California barley for the eleven months were: By sea, 483,456 centals; by rail, 689,080 centals; total, 1,172,536 centals. Shipments by sea increased 9.6 per cent. over the previous year.

Chicago and Milwaukee Receipts.

Receipts for the two weeks ending June 14 for four years have been:

	1878.	1879.	1880.	1881.
Chicago:				
Grain, bu.	4,462,260	6,879,966	7,118,138	8,031,687
Flour, bbls.	283,875	137,974	83,310	145,744
Hogs, No.	282,827	246,494	266,149	262,174
Milwaukee:				
Grain, bu.	523,841	1,311,343	845,674	1,311,650
Flour, bbls.	70,777	95,469	82,970	179,679
Hogs, No.	10,374	8,695	6,847	18,225

The grain and flour receipts this year thus are larger than ever before at this season.

Lake and Canal Rates in May.

The Buffalo *Commercial Advertiser* says: "Although the navigation season of 1881 was very late in opening, and although the accumulation of grain and other freight at the West was large, the demand for lake and canal tonnage has not been as active as last year. As a result, the average freight by water was not as high during last month as in May, 1880, as will be seen from the following statement, showing the average rate by lake on wheat and corn from Chicago to Buffalo, and the average on the same cereals from Buffalo to New York, by canal, for the month of May in the years named:

Year.	Lake. Wheat. Cents.	Lake. Corn. Cents.	Canal. Wheat. Cents.	Canal. Corn. Cents.
1881	4.7	4.2	5.3	4.8
1880	5.0	4.3	6.0	5.5
1879	3.1	2.8	4.7	4.2
1878	2.5	2.2	5.8	5.2
1877	3.5	2.9	5.8	5.0
1876	3.0	2.7	6.7	5.8
1875	3.9	3.7	7.4	6.6
1874	4.5	4.0	11.7	10.8
1873	7.4	6.5	11.8	10.6
1872	8.0	7.4	12 8	11.8

"May opened with the rate on wheat by lake at five cents. During the first half of the month an advance of half a cent was secured, but was soon lost, and by the 21st of the month shipments were made as low as 4¾ cents. A more active demand later, however, imparted considerable strength to the market, and the month closed with shippers paying five cents on wheat. By canal, the season opened with the freight on wheat at six cents, and the month closed with the rate at five cents, the lowest figures for the month. What is needed to start grain for the seaboard in greater quantities is a more active foreign demand."

East-Bound Rates.

The following circular was issued June 14, by Commissioner Fink:

"It having been shown that the established tariff on grain was not maintained by all railroad lines, Commissioner Fink, under the agreement of March 11, has authorized a general reduction of the grain rates on the basis of 20 cents per hundred, Chicago and New York. If this rate is not strictly maintained, further reduction will be authorized to meet the lowest special rate that may be made until such time as all roads are willing to maintain higher rates, and make them alike to all shippers between the same localities. This action is taken to prevent unjust discrimination between shippers from the same or different localities. No other classes of freight except grain and eighth class are affected by this reduction. Rates may be increased without previous ten days' notice."

Canal Traffic.

Shipments on the New York canals from the opening of navigation to June 8 (50 days in 1880 and 21 in 1881) were 1,333,179 tons last year and 705,111 this, an average of 26,664 tons per day in 1880 and 33,605 in 1881. For the week ending June 8 the shipments were 280,715 tons in 1880 and 206,431 in 1881—a decrease of 20 per cent. For this week the shipments of wheat were about the same (37,000 tons) both years, but the shipments of corn fell from 41,382 tons last year to 15,410 this, and the other chief decreases were:

	Tons. 1881.	1880.	Decrease.	P. c.
Pig-iron	1,078	6,235	5,157	82.4
Bituminous coal	7,022	24,039	17,017	71.0
Iron ore	13,898	19,721	5,823	29.5
Sundries	2,798	14,872	12,074	81.1

There was an increase of 3,551 tons, or 12 per cent., in the shipments of anthracite, of 3,564 tons, or 53½ per cent., in those of stone, lime and clay, and of 1,294 tons, or 38 per cent., in the tonnage of the various kinds of manufactured iron. In the articles of merchandise which are most shipped by rail to the west, the canal generally shows an increase this year, amounting for ten named articles to 3,125 tons this year, against 2,771 last—about 13 per cent. This includes such articles as lard, domestic woolen and cotton goods, sugar, molasses and coffee. Two-thirds of the whole last year and one-half this year was sugar, but the increase was wholly in the three first named articles.

RAILROAD LAW.

Validity of Bill of Lading Specification subjecting Freight to Different Classification on a Connecting Road.

Plaintiff, through his agent, shipped from New York to Colorado Springs, Col., by the Star Union Line, a number of casks of wine, for which the Star Union Line, owned and operated by the Pennsylvania Company, issued a bill of lading classifying the wine as fourth-class freight and giving a through rate of $2.10 per 100 lbs. to Colorado Springs. On the margin of the bill of lading were the words: "Subject to difference in classification adopted by Western and Southern roads." The wine was carried to St. Louis as fourth-class freight; but the roads west of St. Louis, in accordance with their own classification, advanced the class, and consequently the rate from St. Louis to Colorado Springs, causing the alleged overcharge, which suit was brought to recover. The questions presented on trial were: 1. Was the plaintiff really bound to pay the advance in rate caused by change in classification? 2. Could plaintiff show that he had a special parole contract with the agent of the defendant company in New York to carry his wine to Colorado Springs for $2.10 per 100 lbs., and set up such a contract outside of the bill of lading? On behalf of the plaintiff it was urged that the marginal note qualification on the bill of lading was unreasonable; also that the change in classification of the goods was unreasonable, their character being stated in the bill of lading. Plaintiff offered a deposition made by his agent in New York tending to show that the agent of the defendant company stated and agreed at the time of shipment that the classification would be uniform throughout the whole route. The Court, however, decided it not admissible, and held:

That the marginal note on the bill of lading was not only reasonable, but eminently proper and necessary for the protection of the carrier; and that, as it appeared that the rates and classifications of the various routes were matters known or accessible to the public, the shipper could not complain of the contract. Judgment for the defendant.—*Strettell vs. Pennsylvania Company, County Court of Arrapahoe County, Colorado, April*, 1881.

Limited Tickets in Missouri.

The Supreme Court of Missouri has just given an important decision regarding the expiration of limited railroad tickets. The Court holds that passengers traveling on scalped and limited railroad tickets have rights that the law sustains. J. M. Evans, a colored man, bought of a scalper at St. Louis a limited ticket to Little Rock., Ark., for which he paid $9, $5.35 less than tariff rate. Evans boarded his train at 9 o'clock in the evening, and the conductor told him that the limitation of the ticket would expire at midnight, and at that hour applied to Evans for his fare. He offered all the money he had to be allowed to ride until morning, but the money ($1.75) was refused, and he was put off in the woods. In groping around in the dark he fell into a cattle-guard, and received severe injuries, for which he sued that company, laying his damages at $1,000. The Court held that the ticket was good for the point indicated, if presented on the train before the limitation expired. The jury gave a verdict of $350.—*American Exchange.*

THE SCRAP HEAP.

Locomotive Building.

The Indianapolis & St. Louis shops in Mattoon, Ill., are to build two heavy Mogul freight engines for the Cleveland, Columbus, Cincinnati & Indianapolis road.

The Canadian Locomotive & Machinery Works, at Kingston, Ont., are to be enlarged by a two-story brick building, 324 by 60 ft. Most of the machinery will be put in the new building, and the old one used as an erecting shop.

The Baldwin Locomotive Works, in Philadelphia, are building 35 engines for the Northern Pacific, several of which are to have the Wootten patent fire-box, for burning small coal and dust.

The Manchester Locomotive Works, at Manchester, N. H., are building two locomotives for the European & North American road.

The Chicago, Burlington & Quincy shops at Aurora, Ill., have just completed two passenger engines with 17 by 24 in. cylinders and 5 ft. 6 in. drivers. The engines weigh 77,500 lbs.; the boilers have 195 flues, 2 in. diameter, and are fed by two injectors. They will be used on the fast express trains.

Car Notes.

The Jackson & Sharp Co., at Wilmington, Del., is building 15 passenger cars for the Western Maryland; six for the Texas & Pacific, and eight for the Northern Pacific. Six Woodruff parlor cars are being built for the Long Island road, and two excursion or hunting cars for the Worcester (Mass.) Excursion Co. In the ship-yard there is a four-masted schooner, three mud and dump scows and several grain barges.

The Pennsylvania Railroad shops at Altoona, Pa., have lately built several open observation cars, one of which will be attached to each passenger train passing over the Alleghenies.

The Toledo, Delphos & Burlington Co. has contracted with the United States Rolling Stock Co. for a large number of flat and coal cars for use on the roads.

The Ogdensburg & Lake Champlain shops at Ogdensburg and Malone, N. Y., are to build 300 box cars for the road. The company will also purchase 200 more from outside builders.

The Peninsular Car Works, at Detroit, Mich., have an order to build 400 flat cars for the Northern Pacific.

The Pullman Car Works, in Detroit, are building eight passenger cars for the Toledo, Delphos & Burlington.

The car wheel foundry of J. Thomas & Son, in Indianapolis, has been sold to the LaFayette Car Co., and will be hereafter run as a branch of the LaFayette works.

The Georgia Car Co. has been organized for the purpose of building a car factory at Cartersville, Ga. Work on the buildings will be begun at once. The incorporators are R. A. Anderson, J. M. Brown, J. H. Flynn, L. P. Grant, C. E. Martin and A. J. Orme.

The Allen Paper Car Wheel Co. is making rapid progress with its new works.

The Wason Manufacturing Co., at Brightwood (Springfield), Mass., is building four handsome first-class passenger cars for the European & North American road.

Bridge Notes.

The Commissioners of Fairmount Park will receive at their office in Philadelphia until noon of June 18, plans and specifications for a bridge over Wissahickon Creek, at or near the site of the old Red Bridge. The new bridge and approaches are to cost $7,000 complete, that being the amount of the appropriation. The party presenting the most handsome and suitable design (in the opinion of the Commissioners) will be awarded the contract.

Rust & Coolidge, of Chicago, have the contract for the bridges over the Kankakee and Illinois rivers on the new Kankakee & Seneca road.

The Pittsburgh Bridge Co., at Pittsburgh, Pa., is completing an order for 20 Greenleaf patent turn-tables to go to Indianapolis.

Iron and Manufacturing Notes.

Blackmer & Post, of St. Louis, have received an order from the Interstate Railroad & Construction Co., of Indianapolis, for 1,000 feet of 12-in. and 1,700 feet of 15-in double strength pipe for culverts; also for two car-loads of culvert pipe for the Buffalo, New York & Philadelphia road. They are very busy, with orders ahead.

Mr. Grant Wilkins, Receiver of the Georgia Iron Works, at Atlanta, Ga., gives notice that he is running the works to their full capacity, and is prepared to fill orders for rails, bar-iron, bridge-iron, rail-joints, etc.

The Blair Iron & Steel Works, at Glenwood, Pa., have been leased by Wm. McKinne & Sons, who are putting in a new seven-ton open hearth steel furnace.

A suit has been begun in the United States Circuit Court in Chicago by Jerome I. Case to set aside the foreclosure and sale by which the works of the Joliet Iron & Steel Co., at Joliet, Ill., were in 1879 transferred to the Joliet Steel Co. The Court is asked to appoint a receiver for the property, pending the suit.

The Missouri Hay Steel Rolling Mill Co. has filed articles of incorporation at Columbus, O. The capital stock is $2,000,000.

Bellefonte Furnace, near Ashland, Ky., went into blast recently.

The firm of Drew & Slater, Cleveland, O., has been dissolved, and the business transferred to the Chapin Bolt & Nut Co.

Norton Furnace, at Ashland, Ky., is running steadily, making 70 tons of iron a day.

Port Leyden Iron Works, at Port Leyden, N. Y., are making 25 tons of iron a day.

The Rail Market.

Steel rails are quiet and unchanged at about $56 to $60 per ton at mill, the price varying chiefly according to time of delivery. A large sale of English steel rails is reported at about $62.50 per ton delivered at New Orleans.

In iron rails not much new business is reported. The mills are now all pretty full of work for some time to come. Quotations are $46.50 to $50 per ton at mill, according to section.

Old iron rails are rather dull, though two or three heavy sales are reported. Holders are asking $26 to $26.50 per ton in Philadelphia, but buyers are holding off for lower prices.

Railroad spikes are quoted in Pittsburgh $2.75 per 100 lbs.; fish-plates, $2.40 to $2.50; track-bolts, $3.25 to $3.85 according to specification.

Spikes.

Editor Cowles, of Cleveland, demands that all traveling tobacco chewers be herded in the smoking car. Where the travel is heavy, however, this would drown all the smokers.—*Courier-Journal.*

Some wicked paragrapher says: "A very curious incident occurred in Kentucky the other day, a railroad train being thrown from the track without injuring anybody above the rank of major.

When the *Derrick* man put on his last year's white vest he found a roll of bills in one of the pockets, amounting to $120, which he had forgotten. P. S.—None of them were receipted.—*Oil City Derrick.*

A Massachusetts railroad company has a treasurer named Poor. Which does not seem to be a happy name for a treasurer.

A traveling soap peddler's persuasive voice broke up a railroad meeting in Findlay the other night, the people all leaving the meeting to listen to the soap man's song. Findlay is in earnest about her railroads.—*Lima Gazette.*

A Narrow Escape.

On the morning of June 16, as a train on the Metropolitan Elevated road was between the Forty-second and Thirty-third street stations in New York, the fireman, who had been back on the platform of the first car talking to a friend, started to go back on the engine, and in some way slipped and fell off the side of the engine. His disappearance was seen by some of the passengers, who reported it to the conductor. There was much excitement and the people crowded out at the next station, expecting to hear that he had fallen to the street and been killed, or at least badly hurt. To their astonishment he was seen walking down the track toward the station. On arriving he reported that he had caught hold of the girder below the rail as he fell, and had received no injury except a bad cut on one hand.

The First Blast Furnace.

The *Berks and Schuylkill Journal*, of Reading, Pa., claims that the first blast furnace in Pennsylvania was at Colebrookdale in Berks County. It was built in 1720 by James Lewis and Anthony Morris, and was owned by an association of which Thomas Rutter, Anthony Morris, Thomas Potts and James Lewis were the principal members. It stood about eight miles north of the mouth of the Manatawny and three-fourths of a mile west of the present village of Boyertown. The site is still marked by large heaps of cinder. This furnace is known to have been still in working order in 1789. A map published in 1759 shows a number of the forges then at work in Berks County, and also the Colebrookdale Furnace. It was probably named after Colebrookdale Furnace in Shropshire, England, from the neighborhood of which some of the settlers in Berks County came.

Hopewell Furnace on French Creek in Berks County was built in 1759 by Wm. Bird, and is still at work. Oley Furnace, 11 miles from Reading, was built about 1770 and is still in use.

Among old forges in Berks County are Charming Forge near Womelsdorf, built in 1759 and still in operation, and Joanna Forge, built in 1792 and still at work.

A Haunted Car.

The express company frequently carries corpses over the

Central Pacific Railroad, and until recently the messengers paid no more attention to a "bone box" than to a sack of potatoes. But it is different now. One of the express cars, which was noted as having been the conveyance of more occupied coffins than any other on the line, a short time since was the scene of most unaccountable movements. The employés credit the mysterious effects to supernatural causes, and the messengers unite in saying that they would rather be discharged than run another trip in what they call "the haunted car."—*San Francisco Post.*

Adventures of a Railroad Surveyor.

Frank Mathias, civil engineer of the Denver & Rio Grande road, who some ten days ago was reported to be surrounded by the Utes and starving at the junction of the Roaring Forks and Grand River, arrived in the city this morning, a pitiable physical wreck, and after undergoing an experience that has few parallels, even in the checkered history of the West.

Over a month ago Mathias, with his surveying apparatus and a wagon filled with the necessary provisions and equipment, started from Salt Lake City to locate a railroad route to this city. His path lay through the southeastern part of Utah, and thence through the Indian Territory. He did not wish to excite the suspicions or animosity of the Utes by a large body of men, and therefore took with him only one companion, a young man named White. Their troubles did not begin until they reached the Indian country, when it became evident that their supply of provisions was too small. The Indians regarded the white men with an animosity which they did not seek to conceal, and when midway in the reservation demanded that the surveyor give them some flour. Their supply was running extremely short, and they said that they could not spare any. The savages received the information with muttered threats, and let them pass only after a long parley. At the junction of the Grand and Gunnison rivers the demand for flour was repeated, and upon being refused the Indians seized the wagon and surveyor's instruments. It was useless to resist half a hundred armed savages, and the surveyors begged only to be allowed to leave the country. In a few angry words they were told to go, but not to come back that way or they would be killed.

With this parting injunction they were hurried from the camp and made their way as best they could, up the Gunnison River. Their rifles were left them, and on the first day Mathias shot a deer. The next day they reached Roaring Forks, and their terror can be better imagined than described when they found the stream too swollen to permit of crossing, and the snow at the north of such a depth that it would have been worse than folly to have attempted to take that direction. Death was certain if they retraced their steps, and they found themselves penned in a spot from which there was apparently no escape. Luckily they had carried a quantity of the deer meat with them and were not without food. They had first thought of venturing into the stream on a log, but it was plain that they would be dashed to pieces in the under-tow, and they reluctantly gave up the project. It was at this juncture that Lafayette Pierce, the man who brought the news of their situation to the city, found them. Their voices could scarcely be heard in reply above the roar of the waters, but they managed to make him understand that they were lost and in want of food. Attaching a stone to a note Mathias had written he concentrated all his strength and threw it across the river. It fell at the feet of Pierce, who, according to directions, started at once for this city. Strengthened by new hope the two survivors watched and waited. Toward the end of the week before last they could see the savages' steady advance, and the chances for escape were growing narrower each moment. Toward evening, on Sunday, the 22d, they heard the report of a gun, and a body of men, with a long train of jacks, emerged from the timber on the other side of the stream. It was the relief party, consisting of six men, including the guide. They had packed lumber from Red Cliff, and with this at once began to construct a flatboat. In three hours they had a rough craft, but waited until morning before making the perilous attempt to reach the sufferers. At daylight the boat was launched and reached the other side in safety. The two starving surveyors were lifted inside and the return trip made.—*Leadville correspondence of St. Louis Globe-Democrat, May* 30.

Italian Railroad Laborers.

The Utica (N. Y.) *Herald* thus speaks of the Italian laborers employed on the New York, West Shore & Buffalo road:

"The majority of the laborers employed on the Schenectady Division of this work are from Italy. Contractors all along the route are wondering what has become of the old-time laborers of other nations. One gentleman suggested that they were all getting rich and holding political offices. That they are scarce is a fact, and the contractors regret it. The Italians are light-limbed and thin-blooded fellows who cannot stand an hour of cold weather. They are employed in squads of 50 or 100 through the Italian Union, New York, and other bosses. The New York 'Union' is an organization after the style of the Chinese Six Companies of San Francisco. It imports thousands of Italians to fill contracts, advances money to pay their passage across the water and railroad fares, and sends out a corps of laborers in charge of foremen who speak the English language. Each laborer is numbered by means of a brass or tin check which he wears around his neck at all times and by this number alone is he known to the time-keeper and paymaster. Their first contract this season was for $1.25 per day with a place for lodging. Several teamsters receive $3.50 for the services of themselves and their horses. Travelers on the day trains along the Central road can see the Italian hotels perched alongside the hills and mountains on the south side of the river and canal. They consist of plain hemlock shanties with open windows only in the lower part. Within there are long board tables like those used on picnic grounds. On all sides of the rooms are shelves or bunks placed closely together in tiers that crowd the ceilings closely. Bunks are placed in the dark attic, and every inch of floor room is utilized for sleeping purposes. The Italians carry all of their clothing upon their persons, and their daily stipend of bread in a canvas bag. They sleep in their clothing from one week to another. I have never found one with soap and towel thus far, and, in fact, I do not think they ever miss these articles. No class of persons lives as abstemiously as the Italian laborers. Their daily food is dry bread, with water at each meal, and occasionally coarse cheap macaroni. Occasionally they buy lard with which they fry potatoes and soak into their bread, and some of them have meat and soup at intervals. Their principal drink on Sundays is cider. One of the foremen ordered five barrels of cider to the shanty while I was on the Mitchell's grocery job. This he will retail to his men and make a handsome profit. The interpreters, or foremen, look out for the commissions or money advanced by the bosses, and repeat the orders given by the English-speaking foreman. When the foreman speaks and points to what he wants done, they all look up and many of them comprehend the order by the sign, but the interpreter repeats the words quickly in Italian and they quietly obey it. The men carry their money in belts about their persons, and each man has a keen, sharp knife or stiletto, which he will use on brief provocation.

"In quarreling both parties have their knives in their closed hands, the blades pointing out under the little finger. If the quarrel is a light one they simply expose a short piece of the point and prick their opponent's arms by quickly repeated touches. If the opponent remains obstinate a movement of the thumb forces the knife point farther and farther out until it makes itself felt and cuts a deep gash. In the hottest of fights there is no boy's play—the knife glistens in the air, and when it reaches its victim the wound will invariably be found on the left side near the ribs and heart, or on the back of the left side. As a rule, they are not quarrelsome, but are quick and treacherous, especially when intoxicated. Many send their money home to Italy. I asked Foreman Malloy what they did when they got old, and the reply was 'They buy an organ and monkey and travel through their country.' Near the Big Nose I found two or three cripples and invalids attending to the camp-fires and playing cards. All around the shanties were found piles of embers made on the previous night for cooking and warming purposes by the thin-blooded laborers. They crowd around the fires after supper and get as warm as possible, and then they crowd into the shanties and sleep. A shanty 20 feet square will accommodate 100 laborers, the more the merrier, as a crowded sleeping room is always warm. They do not mind the vile odors which are exhaled from the long-worn clothing and unwashed bodies—odors that would stifle an American citizen if he approached within two feet of the door of the shanty. Want of cleanliness makes these children of sunny Italy exceedingly lively companions. At night the numerous camp fires that light up the hill sides of the Mohawk Valley give it a remarkably picturesque appearance. A stranger driving along the road side and listening to the gabble of the men would imagine himself within reach of the headquarters of a band of Gipsies. The Italians mind their own business, and seldom, if ever, visit the neighboring villages. Some of the contractors like them pretty well, while others will have nothing to do with them. The wages of some of the men will be advanced to $1.35 and $1.50, as they make themselves useful. The supply of Italians is unlimited."

Electric Light on Railroads.

Railroad men have recently been considering the feasibility of using the electric light for headlights to their engines and for the purpose of generally illuminating trains. The difficulty in the way seems to be that the jar of the locomotive and coaches is liable to cause uncertainty in the continuity of the light. But there is one method that does not appear yet to have been discussed to which this objection will not apply. That is, utilizing the existing telegraph poles and wires for the purpose of making a continuous illumination along the railroad tracks. There are 30 telegraph poles to the mile, and if on every other one of these were hung an electric lamp the entire track could be made as light as day. This would do away entirely with the need of the expensive and cumbrous headlights, and, to some extent, with the necessity for using oil lamps in the trains. It would also obviate all the dangers to railroad traffic that are now incident to the darkness. Accidents resulting from wash-outs, or fallen trees, or land slides, would be things of the past. Obstructions placed by malicious persons on the tracks would be seen at once, or, were the malefactors to take the precaution of cutting the wires before attempting to wreck the train, that would at once extinguish all the lights within the circuit and give warning to the train officers that danger was ahead. Moreover, suppose the case of a train dispatched on mistaken orders: as soon as the case was discovered, the operator at the battery could, by a simple movement of the hand, extinguish the lights, which would be a signal for the trains within his circuit to come to a stand and wait for orders. It may be urged against the suggestion that some of the lamps might get out of order, and remain so unless a close and expensive system of supervision were maintained. This difficulty can be met with the further suggestion that, by a simple system of lettering and numbering the lamps, the engineers of passing trains could report to the next station what particular lamp or lamps might happen to be out of order. At any rate, the plan, which has been suggested by a practical railroad man of great experience, presents so many points of apparent advantage that it must be worth examination. To the public at large it would certainly give a greater feeling of security than is possible under the present system; and, if the economical questions connected with it can be satisfactorily adjusted, it would undoubtedly be considered a large step in advance.—*St. Louis Globe-Democrat.*

Legal Tender.

The public has long conceded that the power of the hotel clerk is superior to that of president. A new rival has sprung up in the railroad ticket agent, as was demonstrated at an Iowa station a few weeks ago.

"I want a ticket to B——," said a well known lady of the town just before train time.

"Twenty-four cents," responded the agent, working his sausage machine. She laid down a silver quarter. Being well acquainted, and a practical joker, the agent drew from his pocket a glittering pants button, passed it over with the ticket and scooped up the quarter.

"Is this a legal tender?" asked the lady, quietly.

"Oh, yes," he answered, with mock gravity, "they are the mainstay of the republic."

She pocketed it and got aboard, leaving the agent's face corruscating with smiles.

A few days after he told it to a brigade of runners buying tickets to B——, and while he was enjoying the encore, the lady appeared with—

"Ticket to B——, please?"

"Twenty-four cents," with a sly wink at the runners. He laid down the ticket, she scooped it and laid down 24 dazzling pants buttons, exactly like the first.

"You said they were legal tender. They go a long way in supporting the family," she chirped sweetly as she bowed from the presence of more than presidential prerogative.

Then he set 'em up to the brigade of enlightened runners.—*Cleveland Leader.*

Sunday Excursion Trains.

A dispatch from White River Junction, Vt., June 9, says: "The Central Vermont Railroad has taken a commendable position regarding Sunday excursion trains. In reply to a recent application for one from Brattleboro to Townshend, J. W. Hobart, General Superintendent, wrote as follows:

"'It is entirely useless to apply for Sunday trains, because our rules regarding such trains are positive, and we cannot, under any circumstances, vary them, unless in case of distress, like death or destruction of property. I know you will, upon reflection, see the propriety of our taking this stand, as we should otherwise run into an encouragement of all sorts of public Sunday gatherings, which inevitably cover a great amount of drunkenness, swearing and carousing. The public, so far, fully sustains us in our position, and even those interested in camp-meetings and other religious gatherings especially desire that we should not vary the rule. You can readily see that, unless we have such a rule, we cannot easily discriminate between religious meetings without getting into trouble at once.'

"The Passumpsic Railroad goes still further, and refuses to run any trains of any kind on Sunday, excepting in exceptional cases like those named by Superintendent Hobart, and in this decision meets the approval of the general public, who would be glad to see this same rule observed, as to freight trains, by all the other railroad companies in the state."

OLD AND NEW ROADS.

Attica, Covington & Southern.—Track has been laid on this road from Attica, Ind., on the Wabash road, southwest to Covington, about 16 miles. Grading is in progress from Covington south to Lodi in Parke County, about 25 miles. The road follows the line of the old Wabash & Erie Canal, and is controlled by the Wabash, St. Louis & Pacific Company.

Bangor & Katahdin.—This company has been organized to build a railroad from Milo, Me., on the Bangor & Piscataquis road, northwest to the Katahdin Iron Works, a distance of 17 miles. The capital stock, $60,000, has all been subscribed.

Bangor & Piscataquis.—The second-mortgage bond holders have agreed to unite with the city of Bangor in the bill in equity asking for the appointment of a receiver for this road.

Boston, Hoosac Tunnel & Western.—A correspondent of the Utica *Herald* gives the following statement of this company's plans:

"First. To secure consolidation of the Hoosac Tunnel and Massachusetts railroad interests with the West Shore road through the Mohawk Valley to the west. This plan would not only save a vast amount of money for the Burt Continental Construction Company or the railroad men forced to work through that organization, but it will also assure the West Shore men a class of freight traffic which is the source of vast profit to the Central-Hudson road at present. It will also give twice as large profits to the managers of one road that could possibly be hoped for by the operation of two rival routes to the Central-Hudson Company. It is generally believed that this plan will eventually be agreed upon—when General Burt's valuation for past services, right of way, franchises, etc., a cool $2,000,000, is fixed at a more reasonable figure.

"Second. The extension of the Hoosac Tunnel route to the west *via* the Albany & Susquehanna road to Sharon Springs, or that vicinity, the selection of a new route to Utica and from Utica west *via* the route already secured for the Utica & Syracuse Air Line Railroad. The fact that little or no land has been purchased east of Utica and that Burt's representatives west of Utica are busily employed, gives considerable strength to this statement of plans. To-day I am informed that agents of the Burt-Hoosac Tunnel railroad, have reappeared in the town of Vernon, Oneida County, and have money in bank to pay for the right of way. They are pressing purchases, and declare that their company will go on and build a railroad regardless of other projects. Movements at the East seem to justify their confidence.

"Third. The other plan talked of is the building of the Hoosac Tunnel route through the Mohawk Valley side by side with the West Shore road. After coming down the valley, I do not believe that this will be done. The expense for right of way, double the amount of rock cutting, excavation and filling involved in the West Shore route and in some cases the virtual demolition of the business houses of many villages if the two routes are parallel, will check this plan effectually. The receipts for local freight and passenger traffic on these rival routes would always be far less than the expenses. The people of the Mohawk Valley desire another railroad, but they say they have no use for three.

"General Burt's Continental Construction Company is active, and ere many days its course will be made known, as this season is too valuable for construction purposes to be frittered away.

"The additional loan of $5,000,000 in New York this week to General Burt's Continental Construction Company, to pay in Boston the 50 per cent. required by that organization in building the Hoosac Tunnel road is another guarantee that this syndicate means business."

Burlington, Cedar Rapids & Northern.—This company is making arrangements to extend its Pacific Division from Clarion, Ia., northwest about 125 miles to Spirit Lake in Dickinson County.

Canada Central.—At a meeting held at Brockville, Ont., June 10, the consolidation of this company with the Canadian Pacific was ratified, and arrangements made to complete the transfer of the road.

Chicago, Burlington & Quincy.—A dispatch from Chicago, June 14, says: "Articles of incorporation for a road to be known as the Joliet, Rockford & Northern Railroad have been filed by the officers of the Chicago, Burlington & Quincy Railroad. This step has been taken to checkmate the alleged encroachment upon the Chicago, Burlington & Quincy territory by the Milwaukee & St. Paul Railroad, and for the primary object of getting coal from the Braidwood mines into the northern country. The proposed road will run from Joliet to Sheridan, on the Fox River Branch of the Burlington road, thence northward, making a connection to Rockford, Ill. Extensions will be made to the Lake Superior country as soon as practicable."

Chicago, St. Paul, Minneapolis & Omaha.—The following circular from President H. H. Porter is dated June 1:

"This company having become the owner of the St. Paul & Sioux City Railroad, and all of its proprietary and connecting railroads, including the roads hitherto known as the Omaha & Northern Nebraska Railroad, and the Sioux City & Nebraska Railroad, all of said railroads (in operation and under construction), will be hereafter known and operated as the Chicago, St. Paul, Minneapolis & Omaha Railway."

Mr. C. D. W. Young, Auditor, in a circular to connecting lines, adds the following:

"Please include all St. Paul & Sioux City Railroad proportions of ticket sales and mileage of St. Paul & Sioux City Railroad cars from June 1, in the reports to the Chicago, St. Paul, Minneapolis & Omaha Railway. All outstanding accounts dating prior to June 1 will be settled by and in the name of the Chicago, St. Paul, Minneapolis & Omaha Railway."

Chicago, Texas & Mexican.—Texas dispatches report that an agreement has been concluded between this company and the Gulf, Colorado & Santa Fe for an exchange of business over each other's lines. The connection between the two roads will be made at Cleburne.

Cincinnati, Hamilton & Dayton.—At the annual meeting in Cincinnati, June 14, the question of consolidation

with the Cleveland, Columbus, Cincinnati & Indianapolis Company was submitted to the stockholders. Out of a total of 35,000 shares there were 28,508 represented at the meeting, of which 27,972 were voted in favor of the consolidation and 536 against it. The question will shortly be submitted to the stockholders of the other company.

Cincinnati & Ohio River.—This company has filed articles of incorporation to build a railroad from Cincinnati up the Ohio River to a point opposite Huntington, W. Va., to connect with the Chesapeake & Ohio. The capital stock of the company is $1,000,000. The incorporators are A. J. Warner, John Byrne, W. M. Ramsey, J. McArthur, C. B. Matthews, Samuel Thomas and W. A. Hutchins.

Cincinnati, Wabash & Michigan.—General Manager Beckley announces that he is ready to receive bids on the grading of the proposed extension from Goshen, Ind., to Benton Harbor, Mich., about 50 miles.

Columbus, Chicago & Indiana Central.—In the United States Court at Columbus, O., June 9, judgment was taken in default in the case of Wm. L. Scott against this company in favor of the plaintiff for $441,007, with interest thereon at 7 per cent. from April 5, 1881, that being the first day of this term of court. The suit was brought to recover on unpaid coupons on the consolidated first-mortgage bonds.

Columbus & Hocking Valley.—At a special meeting in Columbus, O., June 15, the stockholders voted to increase the capital stock from $2,500,000 to $5,000,000 for the purpose of providing for increasing business. The company will at once offer $800,000 of the new stock at par, the proceeds to be used for new equipment and for a second track on the 50 miles from Columbus to Logan. The road has been a very successful one, and has paid 8 per cent. regularly on the stock for several years.

Concord.—Mr. John H. Pearson, a stockholder of this company, has filed in the New Hampshire Supreme Court an information in the nature of a *quo warranto* to inquire by what right Francis B. Hayes holds his position as a director of the Concord Railroad Company. The question involved is whether stockholders have a right to concentrate their votes on one candidate for director under the general law of the state.

Connotton Valley.—Sealed proposals will be received by C. G. Patterson, General Manager, at Canton, O., until June 22, for the grading of the branch or extension known as the Connotton Valley and Straitsville line. This line will extend from Canton to Straitsville, nearly 100 miles. The bids now called for are for the Southwestern Division, 60 miles in length.

Denver & Rio Grande.—A dispatch from Salt Lake, Utah, June 15, says: "The Denver & Rio Grande Railroad Company has 200 miles of railroad bed in process of construction in Utah. Nearly 2,000 men are employed. The work is carried on in the name of the Sevier Valley Railroad. The line enters Utah from Colorado on the Grand River Forks, east of the Wahsatch Range, one branch going south, and following the Salina Cañon through the range, the other coming to Salt Lake by way of Pleasant Valley and the Spanish Fork Cañon. Of this latter branch 60 miles from Provo to Pleasant Valley are in operation."

Detroit, Bay City & Mackinaw.—It is proposed to build a new road from Detroit by Bay City to the Straits of Mackinaw. The line projected is from Detroit to Bay City, about half way between the Flint & Pere Marquette and the Detroit & Bay City roads, and thence northward through the tier of counties bordering on Lake Huron, well to the eastward of the Jackson, Lansing & Saginaw.

East Line & Red River.—The latest time-table of this road (June 13) shows two regular trains, a mail and a freight, running the whole length of this road between Jefferson, Tex., and Greenville, 124 miles. The mail makes the run in 7¾ hours, an average of 16 miles an hour, not including stops. The stations, with the distances from Jefferson are: Kellyville, 5 miles; Garrett's Tank —; Lassater, 12; Avinger, 18; Hughes' Spring, 27; Daingerfield, 33; Cason, 40; Pittsburg, 50; Leesburg, 57; Scroggins' Mill, 65; Winnsboro, 70; Carroll Prairie, 83; Sulphur Springs, 93; Black Jack Grove, 108; Tom Campbell, 115; Greenville, 124 miles.

Eldred & Bolivar.—The grading of this road is nearly finished, and tracklaying has been begun. The road will be about nine miles long, from Eldred, Pa., northeast to the New York state line, where it will connect with the Wellsville & Bolivar road.

Erie & Western Transportation Co.—At the annual meeting in Philadelphia last week the reports showed that the tonnage carried last year was over 700,000 tons, and that the company owns a fleet of 17 large steamers and three sailing vessels, with three elevators at Erie, one building at Buffalo, and very large storage and depot facilities at Chicago. The stockholders voted to increase the capital stock from $2,000,000 to $3,000,000. The new stock will be issued to existing stockholders on payment of 60 per cent. of its face value in cash, thus bringing the company $600,000. The remaining $400,000 is intended to represent a dividend accrued from the sale of the old securities of the Empire Transportation Line. The amount of additional capital to be paid in is intended to be used in increasing the company's fleet of vessels and in improving its terminal facilities at some of the principal lake ports.

Evansville, Seymour & Bellefontaine.—The Evansville & Seymour, an organization covering partly the same route, has been consolidated with this company. Arrangements are being made for the completion of the road.

Fulton & Washington.—This company has filed articles of incorporation in Pennsylvania for a narrow-gauge road from the West Virginia state line in Washington County to the Maryland state line in Fulton County. The capital stock is $1,218,000; the length of the road is given as 203 miles, though the distance is not over 150 miles in a direct line. The corporators are Charles D. Barney, E. L. McConaughy, Robert M. Janney and others.

Gainesville & Dahlonega.—At the recent annual meeting the officers reported that the road had been finally located all the way to Dahlonega. About nine miles have been graded, and the piers of the Chattahoochie bridge built.

Gainesville & Jefferson.—Work on this Georgia road has been stopped by an injunction sued out by the town of Jefferson, which has subscribed $20,000 in aid of the road.

Grand Trunk.—A special cable dispatch from London to the Toronto *Globe* says: "The directors of the Grand Trunk Railway have issued a prospectus for an issue of £2,500,000 sterling, being the balance of the ordinary stock, at 126 per centum, in provisional certificates, exchangeable when fully paid up for certificates of ordinary stock, ranking *pari passu* with the whole issue. In a memorandum accompanying the prospectus, the directors emphasize the point that the money is asked to enable them to proceed immediately to increase the carrying capacity of the road, and consequently its earning power. The objects of the issue are: 1. A laying of double track on important sections of the railway, constructing additional sidings and lengthening other sidings to facilitate the passing of crossing trains. 2. Providing additional engines, freight cars, passenger carriages, and other vehicles to meet the increasing traffic exchanged with the Chicago & Grand Trunk and other allied railways. 3. Providing additional terminal facilities, grain elevators and other appliances necessary for the generally increasing business of the railway with affiliated lines."

Green Bay, Winona & St. Paul.—It is stated that this company will build a branch from Plover, Wis., to Stevens Point, about four miles, which is expected to secure a considerable lumber traffic.

The Railroad Commissioner of Wisconsin has recently caused an inspection of the bridges on this road to be made, in consequence of complaints made to him. He reports that the bridges are generally safe and in fair condition, but that many of them will need renewal before long, in consequence of the inferior timber originally used.

Indiana, Bloomington & Western.—The following circular from C. E. Henderson, Assistant General Manager in charge of the Ohio Division (late the Cincinnati, Sandusky & Cleveland road) is dated May 28:

"All accounts of this division are kept separate from the main line, and separate reports should be made commencing with this month's (May) business."

Indiana & Michigan.—This company has filed articles of incorporation to build a railroad from La Crosse, Ind., on the Louisville, New Albany & Chicago, northeast to the Michigan line, about 40 miles.

Kanawha.—This company has filed articles of incorporation in West Virginia to build a railroad from Cabin Creek in Kanawha County to a point on the Clear Fork of Big Coal River, near the mouth of Marsh Fork. It will be a branch from the Chesapeake & Ohio to reach some extensive coal deposits.

Kankakee & Seneca.—Contracts have been let for grading some miles of this road out of Kankakee, Ill.; also for the bridges over the Kankakee and Illinois rivers.

Kentucky Central.—The syndicate which lately bought the controlling interest in this company appears to contain parties interested both in the East Tennessee, Virginia & Georgia and the Chesapeake & Ohio. It is stated that the gauge of the road will be changed from 5 ft. to 4 ft. 8½ in., and many improvements made. There is also talk of a new bridge over the Ohio from Newport to Cincinnati.

Lancaster & Hudson.—It is stated that Mr. N. C. Munson, the contractor who is building the Massachusetts Central, has secured control of this road, and that he purposes extending it to Fitchburg as a branch of the Central. The road runs from Hudson, Mass., to Clinton, eight miles; it was built in 1873, but the company went into bankruptcy about the time the road was finished, and it has never been operated.

Maine Central.—The following statement is made for the four months ending April 30:

Gross earnings	$556,475
Expenses	386,663
Net earnings	$169,812
Interest and rentals	207,641
Deficit	$37,829

The deficit for the corresponding period in 1880 was $58,836. This statement covers that part of the year when the expenses are greatest, and does not by any means indicate a deficit for the year.

Manhattan Elevated.—Attorney General Ward on June 13 gave a hearing to parties interested in the securities of this company, who advanced arguments in favor of the withdrawal of the suit brought by him against the company in the name of the state.

Current Wall street reports are that Jay Gould is operating in the stock of this company with a view of securing control. This is merely rumor, however, and may have no basis in fact.

Michigan Central.—Notice has been given of a meeting to elect directors and officers of the Union Railroad Company, which has been in abeyance for years, but originally owned the section of the Michigan Central from Chicago to the Indiana line.

Of this the Chicago *Tribune* says: "To resurrect the Union Railway Company, which many years ago was amalgamated with the Michigan Central proper, certainly means something. But what it means none except those in the ring can tell. It is the general opinion that this company is being reorganized for the purpose of taking charge of the construction of an extension of the Michigan Central Railroad from Kensington, along the banks of Lake Calumet, to a connection with the Lake Shore & Michigan Southern near South Chicago. Rumors have been in circulation for some time that it is the intention of Vanderbilt to take the Michigan Central from the Central depot, at the foot of Lake street, and run it over the Lake Shore into the depot on Van Buren street. The above certainly looks as if Vanderbilt means to carry out this project. By doing so he will save a great amount of money now paid as rent to the Illinois Central for the use of its tracks from Kensington. The extension from Kensington to a connection with the Lake Shore can easily be made, and will cost but very little. He has already the right of way which belongs to the Chicago & Canada Southern, owned by him, and which runs along Lake Calumet through Pullman."

Midland, of New Jersey.—At the special meetings last week the stockholders ratified the agreements of consolidation between this company, the Paterson Extension, the Midland Connecting, the North Jersey, the Water Gap and the Pennsylvania Midland Railroad companies. The name of the consolidated company is the New York, Susquehanna & Western Railroad Company; it will issue $10,000,000 preferred and $20,000,000 common stock. The finished road owned is the old Midland road from Marion Junction, N. J., to Unionville, 71 miles, and the company holds the lease of the Middletown, Unionville & Water Gap, from Unionville to Middletown, N. Y., 13 miles.

Of the other companies the Paterson Extension has nearly finished a spur in Paterson about a mile long. The Midland Connecting Company has begun work on a branch line from Ogdensburg, N. J., to near Hainesburg, about 40 miles; the North Jersey charter covers the line from Hainesburg to the Water Gap, four miles. The Water Gap Company was organized to build from the Water Gap to Stroudsburg, Pa., five miles, and the Pennsylvania Midland from Stroudsburg to a point in the coal regions not yet fully decided on.

Missouri, Kansas & Texas.—On the Southeastern Extension track is now laid to Mineola, Tex., the crossing of the International & Great Northern and the Texas & Pacific roads. Mineola is about 48 miles southeast from Greenville and 100 miles from Denison on the main line.

Nevada Central.—It is stated that a controlling interest in this road has been sold to Sidney Dillon and others in the interest of the Union Pacific Company. The road does not connect with the Union Pacific at all, but is a branch of the Central Pacific from Battle Mountain, Nevada, south to Austin, 93 miles.

New Bonds.—New issues of bonds have been placed or offered on the market as follows:

Chicago & Northwestern new 5 per cent. bonds secured on new lines in Dakota were offered to the extent of $3,500,000 last week by Kuhn, Loeb & Co., of New York. They now announce that applications received exceed the amount offered.

The *Hannibal & St. Joseph* will receive bids at its office in New York until noon of June 23, for all or any part of an issue of $3,000,000 consolidated mortgage bonds, having 30 years to run. Payment for the bonds must be made by June 28. Notice of accepted bids will be given on June 25.

New York City & Northern.—This company has begun to increase its local train service. The new time-table shows two passenger and one mixed, in all three trains through to Brewsters; one passenger train to Mahopac, 43½ miles from the New York terminus; 17 trains to Van Courtlandt, five miles out, and 27 trains running over the mile of bridge and trestle from the Metropolitan Elevated terminus at One-hundred-and-fifty-fifth street to High Bridge; in all 48 trains. The High Bridge trains, however, are simply an extension of the elevated railroad service to High Bridge.

New York, Housatonic & Northern.—A suit has been begun in the New York Supreme Court to set aside the recent foreclosure sale on the ground that the trustees allowed the property to be sold for much less than its real value.

New York, Lackawanna & Western.—Work has been begun on the western end of this line. Contractors Loss and McRae have a force at work grading at East Buffalo, and at Cold Springs, in Erie County.

New York, West Shore & Buffalo.—The New York *Bulletin* of June 14 says: "The stockholders of the New York, West Shore & Buffalo Railway Company and the North River Railroad Company had a secret meeting at No. 20 Nassau street, Monday, at which the agreement for the consolidation of the two roads was considered."

The Commissioners of the New York Land Office have granted this company the right of way over certain state lands in Schenectady, Montgomery, Herkimer and Oneida counties.

Northern Pacific.—Track on the Pend d'Oreille Division is now laid to Hangman Creek, 147 miles from the starting point on the Columbia River at Ainsworth, and two miles from Spokan Falls, Wash. Ter. Some delay will be caused by the bridges at Hangman Creek, which are yet unfinished. The grading from Spokan Falls to Pend d'Oreille, 67 miles, is substantially finished, and track can be laid rapidly as soon as the bridges are ready. The contractors have laid over 100 miles of track since they resumed work in March.

Additions have been made to the orders already out for increased equipment. The new orders include 10 locomotives, 8 passenger and 400 flat cars. The new locomotives are to have the Wootten fire-box, which is believed to be well adapted for burning the brown coal or lignite found on the line west of Bismarck.

A contract for 30 miles of grading from North Pacific Junction, Minn., eastward on the Wisconsin Division, has been let to McDermid & Co., who will begin work at once.

Oregon Railway & Navigation Co.—This company reports earnings for the month of May as follows:

	Gross earnings.	Net earnings.
River Divison	$178,450	$88,450
Ocean Division	105,050	60,050
Railroad Division	136,100	86,100
Total	$419,600	$234,600

The total net earnings show an increase of $39,574, or 20.3 per cent., over those for May, 1880.

Peoria & Pekin Union.—The Peoria *Transcript* thus speaks of the plans adopted by this company: "The plans provide for a very extensive system of improvements, involving an outlay of about $400,000. In the yard between Chestnut and Persimmon streets and in Lower Peoria, there will be about 35 miles of track.

"There will be three depots. The passenger house, situated between Chestnut and Oak streets, is to be 400 by 62 ft. on the ground. It will have a covered platform reaching from the building to Washington street. All the tracks will be on the Water street side, so that passengers can reach the depot without crossing a rail. The details of the interior are not yet decided upon, but Judge Cobrs has several plans, and from them all expects to be able to present that by which the depot is to be built, on Monday next. Five tracks will lead to the depot, all under the covered shed on Washington street. All of the roads running into Peoria are to use the depot. Three of the tracks will be stubs, ending in the sheds; the other two will be a part of the main line and pass directly through.

"The freight houses are to be huge affairs, each about 600 by 60 ft. The approaches to them will be by a driveway between Water and Washington streets. A platform 28 ft. wide and extending the entire length of the buildings will be placed on the track side; on the drive-way side it will be 16 ft. wide. By means of this cars can be loaded either from the depot or from wagons without danger to freight in any kind of weather. The freight depots will be located just south of the passenger house, on what is known as Madison square sub-division. There will be different tracks for both out and in freight and passenger trains. One thousand tons of steel rail have been ordered for the new track, which with that already down, will be sufficient for all purposes the present year. The freight depot nearest Washington street will have on the south end a platform 230 by 60 ft. in size.

"The tracks in the yard, and also in Lower Peoria, are to be laid straight, avoiding all the curves that are now so troublesome. That to the Advance elevator will be changed so as to leave the main line south of the freight depots. The present freight and round houses are to be removed to make way for the straightening of the track. The latter will be rebuilt further away, on the Water street side of the track.

"The plans and survey have been prepared by Chief Engineer W. E. Taylor and his assistant, J. H. Place. As before stated, there is to be no delay in the matter, and workmen will break ground next week."

Owasco River.—This company has been organized to build a railroad from Auburn, N. Y., to the foot of Owasco Lake, a distance of three miles. The capital stock is $30,000.

Pennsylvania.—Sealed proposals were received at the Chief Engineer's office in Philadelphia, June 13, for the grading and masonry for additional tracks between Bristol and Schencks, Germantown Junction and the Schuylkill

River, Rosemont and Radnor, Wayne and Eagle and between Malvern and Frazer; also for the proposed change of line at Lancaster.

The *North American* says: "The new 4 per cent. loan of the Pennsylvania Railroad Company is the first bond of so low a rate of interest ever issued by any American railroad, and the avidity with which it has been taken is certainly indicative of a very high credit for that corporation. The loan was placed on Tuesday last, when President Roberts and Vice-President Smith visited New York, paid for 208,446 shares of Philadelphia, Wilmington & Baltimore stock, and had it delivered to them. They at once deposited 200,000 shares of it as collateral for the loan of $10,000,000 with Drexel, Morgan & Co., in whose office the transfer of stock from the Kidder committee to the Pensylvania officials was made. The three firms that furnished the cash were Drexel & Co., of this city; Drexel, Morgan & Co. and Winslow, Lanier & Co., of New York; and the demand for the loan was so great that the whole amount could have been taken twice over. The loan was taken by these firms at 97, and yesterday was quoted as high as 99, and hard to get at that. About two-thirds of it was bought in this city, more than half the remainder in Boston, and New York took what was left. The sinking fund is not to consist of $260,000 annually, as was conjectured before authorized information on this point was attainable, but of the difference between the amount that would pay the dividends on the stock deposited as collateral and the amount payable as interest, less taxes. The settlement will be made semi-annually. The semi-annual dividend paid by the Philadelphia, Wilmington & Baltimore is 4 per cent., which on 200,000 shares at par would be $400,000. Two per cent semi-annually in interest on the loan is $200,000, and the taxes are estimated in round numbers at $25,000. This leaves $175,000 semi-annually for the sinking fund, or a total of $350,000 a year. The bonds will thus be redeemable to the extent of $175,000 at par only, if presented; and if not presented to that amount, the unpaid difference, or if not presented for redemption at all during the six months, the whole $175,000 will be deposited by the company, which will call in the whole issue at the expiration of 40 years. If the full possibility of redemption is carried out in regular succession of time, $350,000 a year will wipe out the loan in less than 30 years."

The contract for the River Front Branch which reaches the wharves on the Delaware front in Philadelphia, has been awarded to William Wharton, Jr., who will simply construct the road the company furnishing all material. The road now extends on Delaware avenue as far north as Dock street, and under this contract it will be extended to Lehigh avenue, to connect with the tracks at that point. In order to avoid sharp curves and make short cuts the company has purchased considerable property. Two iron bridges will be built to cross the Aramingo Creek, one at Delaware avenue, and the other at Lehigh avenue.

Pensacola & Atlantic.—Bids will be received at the office of W. D. Chipley, Vice-President and General Superintendent, at Pensacola, Fla., until July 16, for the building of 25 miles of this road from Pensacola eastward, and 25 miles from the Chattahoochie westward. Bids may be made for the whole work or for the grading, bridging, ties or any other part separately. Specifications and other details can be seen at the office in Pensacola after July 3.

Proposals will also be received for building the interval between the two located sections, upon the personal examination of contractors, the exact location not having been yet settled.

Philadelphia & Reading.—The Pottsville (Pa). *Miners' Journal* says: "The railroad accommodation between Pottsville and the western end of the county has never been of a satisfactory character. Although Tremont is only about 15 miles from Pottsville by wagon road the route by rail is close to 40 miles. In the course of a few weeks the 40 miles will be cut down to 12 or 14. Mr. Thomas A. Reilly has obtained the contract for shortening the route, and his men began the work on Monday. When finished the direct route by rail between the county seat and Tremont and other points in the western part of the county will enable travelers to reach Pottsville at an early hour in the morning and leave at a late hour in the afternoon. A branch will be built from the People's Railway at West Woods, to the Mine Hill Railroad, and another from the latter to the Tremont Branch at a point a little below West Woods. The connections will not be much more than a half mile in length and will make the road almost straight."

Rome, Watertown & Ogdensburg.—The extension of the Lake Ontario Division from Lewiston, N. Y., to Suspension Bridge has been completed. It is six miles long and completes the connection with the Great Western of Canada.

The New York *World* of June 14 says: "The directors at their meeting in Oswego last week resolved to fund four years' coupons and give for them an income mortgage bond, bearing interest of not over 7 per cent, and to issue a new bond for the principal sum of the old bond, to draw interest at the rate of 5 per cent. per annum for three years from April, 1882, and 6 per cent. from April, 1885. The stock is to be assessed $10 per share, for which the stockholders will receive an income mortgage bond like that given for the coupons. This sum will pay off the floating debt and the balance is to be applied to the purchase of equipment and to double-track the road from Oswego west to Suspension Bridge."

St. Joe & Desloge.—This road is of 3 ft. gauge and 13 miles long, extending from Summit, Mo., on the Iron Mountain road to Bonne Terre. It was completed in January, 1880, and was built by the St. Joe & Desloge Lead Company. It has very little business outside of the mines of that company. Last year the road carried 72,200 tons of freight, and the business this year is expected to reach 100,000 tons. Bonne Terre is only 30 miles from the Mississippi, and it is possible that the road may be extended to the river, as a great saving in cost of coal and coke and in freight on lead could be secured by a river connection.

St. Lawrence South Shore.—Surveys have been completed for this road from Dundee, P. Q., to Huntingdon, and contracts will soon be let. The road is part of a line intended to connect Montreal with the Rome, Watertown & Ogdensburg road.

St. Louis & San Francisco.—The track of the Arkansas Division last week reached Fayetteville, the most important town in Northwestern Arkansas. This point is 20 miles south by west from the late terminus at Benton, and 70 miles from the junction with the main line at Plymouth, Mo. Work is progressing steadily on the extension from Fayetteville to Ft. Smith, about 55 miles.

St. Louis, Texas & Gulf.—This company was organized recently at Marshall, Tex., to build a railroad from that place southward to Sabine Pass and thence to Galveston. The capital stock is fixed at $8,125,000. The company has absorbed the Longview & Sabine Valley, which is completed 11 miles.

Southern Tier.—This company has filed articles of incorporation in Pennsylvania to build a narrow-gauge road from West Elizabeth in Allegheny County to Waynesboro in Franklin County. Length of proposed road is given at 208 miles (it is about 130 miles in a direct line), and the capital stock is fixed at $1,248,000. The corporators are Charles D. Barney, Robert M. Janney, E. L. McConaughy and others.

Tamaroa, Mt. Vernon & Vincennes.—This company has been organized to extend the Wabash, Chester & Western road from its present terminus at Tamaroa, Ill., east by north through Mt. Vernon to the Wabash River opposite Vincennes. The distance is about 100 miles. The capital stock is fixed at $1,500,000.

Tennessee River, Rhea Springs & Crossville.—This company has filed articles of incorporation in Tennessee. The road is to run from the Tennessee River near Brady's Station, thence to Rhea Springs, to a crossing on the Cincinnati Southern between Spring City and Low Range stations, up Walden's Ridge to Robertson's or Cawood's Gap, and to Crossville in Cumberland County. It will be about 25 miles long.

Texas & Pacific.—In the suit involving the liability of this company to pay the license or franchise tax of $12,500 assessed upon it in Pennsylvania, the Supreme Court of that state has decided in favor of the company. The state officers held that the company was liable to this tax on its stock because the principal office was in Philadelphia, but the company claimed that its charter was granted by Congress, and that it was therefore a corporation foreign to the state, the mere location of an office in the state not affecting its status. The Supreme Court sustained the company's view.

Track on the Rio Grande Division, the extension to El Paso, is reported laid to a point 322 miles westward from Dallas, and 543 miles from Texarkana. Work is being pushed forward as fast as possible.

Troy & Greenfield.—The amount of tolls paid during the six months ending March 31 by the companies whose trains pass over this road was as follows:

	1880-81.	1879-80.	Inc. or Dec.	P. c.
Fitchburg	$91,717.50	$70,993.28	I. $20,724.22	29.3
Troy & Boston	11,179.92	14,947.50	D. 3,767.58	25.1
Boston, Hoosac Tunnel & Western	7,424.55	2,950.00	I. 4,474.55	151.7
Total	$110,321.97	$88,890.78	I. $21,431.19	24.1

The number of loaded freight cars passing over the road and through the Hoosac Tunnel in the six months was 32,096, an increase of 6,683 cars, or 26.3 per cent., over the corresponding half of the previous year.

The Labor Market.—The freight brakemen on the Arkansas and Texas divisions of the St. Louis, Iron Mountain & Southern road struck on the night of June 12 for an advance in wages from $50 to $60 per month. The officers of the company offered to change the system and pay by the trip instead of by the month, but the men refused to accept. All freight traffic was stopped at once.

The Providence & Worcester Company has raised the wages of brakemen from $1.62½ to $1.75 per day.

Union Pacific.—The *American Exchange* of June 13, says: "For some time the Union Pacific Railway Company has had in contemplation the building of a line of road from Granger, a point on the Union Pacific between Cheyenne and Sidney, to a connection in Oregon with the lines of the Oregon Railway & Navigation Company. The probable Oregon terminus of the new line is Baker City, a distance of about 550 miles from Granger. It is understood that the line has been virtually laid out and that maps and preliminary surveys of the proposed route have been made. An independent company will undertake the work in the interest of the Union Pacific. Official confirmation of the reported plan for raising funds to complete the road could not be obtained on Saturday, but it is understood, on good authority, that each holder of 100 shares of Union Pacific stock will be offered the privilege to subscribe, at par, to $2,000 first-mortgage bonds of the new company, a bonus of 10 shares of stock of the new company also to go to each subscriber. The sum raised by this plan, on the present capitalization of the Union Pacific Railway Company, would be $10,000,000, or at the rate of over $18,000 per mile of new road. It is understood that the Union Pacific Company will not guarantee the new bonds. When the new line is completed it will bring the Union Pacific into competion with the Northern Pacific on through business."

Wabash, St. Louis & Pacific.—Tracklaying on the Quincy, Missouri & Pacific Division was recently resumed, and the rails are now down for 10 miles westward from last year's terminus at Milan, Mo. It is said that the extension will not be carried further this year than Trenton, 39 miles from Milan.

Wellsville & Bolivar.—Work on this road has been begun by the contractors, Craigie, Rafferty & Yeomans, of Buffalo, N. Y. The road is to run from the New York, Lake Erie & Western at Wellsville, N. Y., southwest to the Pennsylvania line, in the town of Bolivar, about 19 miles.

Whitefield & Jefferson.—This road has been this spring extended eastward two miles in Jefferson, N. H. The new terminus is more conveniently situated than the old Jefferson station.

Wooster & Lake Erie.—Surveys are being made for this road from Wooster, O., northeast to Russell on the Cleveland, Tuscarawas Valley & Wheeling road. The distance is about 16 miles.

LOCOMOTIVE RETURNS, JANUARY, 1881.

Master Mechanics of all American railroads are invited to send us their monthly returns for this table.

NAME OF ROAD.	Miles of road	Locomotives in service	MILEAGE. Total	MILEAGE. Average per engine	MILEAGE. Ton of coal	MILEAGE. Cord of wood	MILEAGE. Pint of oil	AVERAGE TRAIN. Passenger cars	AVERAGE TRAIN. Loaded freight cars	COST IN CENTS PER. Passenger car mile	COST IN CENTS PER. Freight car mile	COST PER MILE IN CENTS FOR. Repairs	Fuel	Stores	Miscellaneous	Engineers, firemen and wipers	Total	AVERAGE COST OF. Coal, per ton	Wood, per cord
																		$	$
Allegheny Valley, River Div*	139	36	85,184	2,366	29.67	.....	19.98	3.00	20.10	4.603	1.041	5.61	4.49	0.54	.....	6.41	17.05	.....	.....
Low Grade Div.*	120	19	36,087	1,899	26.40	.....	16.15	2.90	17.80	6.366	1.204	11.77	3.94	0.73	.....	6.84	23.28	.....	.....
Buff., Pitts. & West*	180	24	50,085	2,087	30.03	.....	21.34	3.00	10.70	4.350	1.643	3.55	5.20	0.51	.....	5.81	15.07	.....	.....
Central Pacific, Western Div.†	200	26	77,503	2,966	45.56	.....	19.81	.....	.....	.....	.....	3.18	10.14	0.46	0.37	7.05	21.19	4.75	4.60
Northern & San Pablo Divs.†	104	31	83,402	2,690	36.57	.....	19.33	.....	.....	.....	.....	10.17	19.19	0.45	0.57	7.46	31.84	4.75	4.60
Visalia Div.†	157	12	34,471	2,873	34.09	.....	18.75	.....	.....	.....	.....	4.86	24.94	0.45	0.09	7.51	36.89	4.75	4.60
Tulare Div.†	170	14	39,846	2,846	35.56	.....	14.10	.....	.....	.....	.....	4.77	26.58	0.64	0.23	8.31	50.53	13.50	4.60
Los Angeles, San Diego, Yuma & Wilm. Divs.†	416	32	105,883	3,309	38.70	.....	16.07	.....	.....	.....	.....	3.48	34.44	0.56	0.15	7.19	45.82	13.50	4.60
Gila & Tucson Divs.†	478	30	99,903	3,330	49.24	.....	17.74	.....	.....	.....	.....	2.24	27.00	0.53	0.39	7.56	37.72	13.50	4.60
California Pacific Div.†	179	9	26,346	2,927	54.47	.....	27.97	.....	.....	.....	.....	6.61	8.99	0.36	0.75	7.06	23.77	4.75	4.60
Stockton & Copperopolis†	49	2	5,320	2,660	.....	46.87	18.87	.....	.....	.....	.....	2.28	9.19	0.45	0.34	6.05	18.16	.....	4.60
Sacramento Div.†	119	43	91,949	2,138	.....	23.21	21.07	.....	.....	.....	.....	6.22	17.51	0.45	0.33	8.57	33.12	.....	4.60
Oregon Div.†	151	6	30,851	5,469	.....	47.51	25.53	.....	.....	.....	.....	9.59	9.68	0.35	0.10	7.40	27.12	.....	4.60
Truckee Div.†	205	28	77,734	2,776	32.89	72.95	20.32	.....	.....	.....	.....	3.85	13.89	0.44	0.33	8.06	26.57	4.75	4.60
Humboldt Div.†	200	21	60,473	2,880	37.83	.....	21.22	.....	.....	.....	.....	4.47	12.73	0.43	0.33	7.75	25.71	4.75	4.60
Salt Lake Div.†	219	26	92,116	3,543	27.32	.....	14.99	.....	.....	.....	.....	7.09	17.52	0.59	0.19	7.09	33.38	4.75	4.60
Chi. & Eastern Ill., Main Line‡	158	....	125,248	.....	24.00	.....	24.00	.....	33.20	.....	.....	3.86	6.70	0.30	.....	5.50	16.36	.....	.....
Terre Haute Div.‡	72	....	25,766	.....	28.00	.....	25.00	.....	36.00	.....	.....	4.50	5.80	0.30	.....	4.70	15.30	.....	.....
Cleveland & Pittsburgh*	225	86	203,140	2,331	36.46	.....	18.04	3.00	15.70	3.413	1.094	3.43	4.06	0.53	2.89	6.07	17.88	4.50	2.90
Cleve., Tus. Val. & Wheeling	158	20	71,560	3,578	28.51	.....	15.25	.....	35.00	.....	.....	3.78	2.68	0.38	.....	6.31	13.35	0.70	2.00
Dela., Lacka. & Western, Bloomsburg Div.‖	80	25	66,078	2,643	.....	.....	28.48	.....	.....	.....	.....	3.26	.....	0.30	.....	4.68	8.54	.....	.....
Erie & Pittsburgh*	98	29	77,672	2,678	32.04	.....	17.61	3.20	14.40	3.389	1.010	2.02	5.83	0.56	1.34	6.71	16.46	1.87	1.87
Grand Rapids & Indiana	332	39	118,500	3,038	32.59	37.55	15.43	.....	.....	.....	.....	2.83	9.55	0.52	1.20	5.84	19.90	3.50	2.50
Green Bay & Minnesota	240	16	34,409	2,151	52.02	23.71	24.30	.....	10.26	.....	.....	3.34	8.88	0.40	0.03	4.48	17.13	3.65	2.25
Houston & Texas Central¶	554	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois Central, Chicago Div.‖	365	114	306,231	2,688	29.46	.....	12.60	4.77	14.99	.....	.....	4.9	5.61	0.36	.....	6.35	17.24	1.60	3.25
Middle Div.‖	161	21	93,142	864	33.97	.....	18.58	1.75	12.90	.....	.....	2.78	4.81	0.34	.....	5.08	12.9	1.6	3.25
North Div.‖	245	55	163,228	2,968	23.42	.....	14.41	3.78	10.79	.....	.....	4.23	7.04	0.32	.....	5.75	17.14	1.60	3.25
Springfield Div.‖	113	15	33,569	2,238	26.90	.....	15.95	2.14	10.04	.....	.....	1.94	5.42	0.34	.....	4.93	12.63	1.40	3.00
Iowa Div.‖	401	39	115,161	2,953	24.25	.....	13.52	3.92	9.53	.....	.....	3.48	9.16	0.35	.....	5.95	19.34	2.25	5.00
Jeff., Madison & Indianap.*	226	41	109,094	2,661	35.01	.....	15.19	3.09	20.54	3.810	1.300	3.75	7.35	0.38	3.50	5.89	21.07	2.50	2.00
Kan. City, St. Jo. & Coun Bl**	247	38	116,398	3,063	34.90	.....	23.00	3.50	17.70	.....	.....	3.50	6.10	0.30	.....	6.30	16.50	2.00	3.75
Lake Shore & Mich. So. Buffalo Div.‡	....	82	244,247	2,978	32.71	67.27	21.32	.....	.....	.....	.....	3.99	8.13	0.36	.....	6.39	18.90	2.60	5.69
Erie Div.‡	....	121	339,892	2,809	31.37	.....	25.38	.....	.....	.....	.....	5.20	7.51	0.33	.....	6.09	19.13	2.2	5.43
Toledo Div.‡	....	91	252,669	2,777	24.29	69.66	16.87	.....	.....	.....	.....	4.24	10.88	0.44	.....	6.82	22.54	2.67	4.08
Mich. Southern Div.‡	....	200	595,455	2,977	32.94	57.01	19.31	.....	.....	.....	.....	3.57	9.3	0.36	.....	6.00	19.33	3.10	4.63
Little R'k, Miss. Riv & Texas	....	....	20,724	.....	.....	53.00	9.00	.....	.....	.....	.....	3.34	4.43	0.67	1.40	6.25	16.3	.....	2.25
Louisiana Western	119	8	21,967	2,741	56.30	56.50	44.20	.....	46.00	.....	.....	1.06	9.00	0.21	.....	6.62	16.89	6.25	2.00
Louisv'e & Nashv'e, First Div††	470	52	148,506	2,856	26.91	.....	13.28	4.05	14.69	3.370	1.520	4.52	7.08	0.32	1.56	6.02	19.10	1.75	2.15
Second Div.††	200	26	76,110	2,927	29.56	.....	20.54	4.16	13.95	3.820	1.410	5.9	5.95	0.21	2.42	6.51	21.0	1.72	2.55
Memphis Div.††	130	19	42,830	2,980	26.69	.....	16.81	4.64	13.95	4.040	1.740	8.68	8.93	0.29	1.69	5.87	25.46	2.57	2.00
Nash. & Decatur Div.††	102	19	57,354	3,019	27.12	.....	16.87	3.71	12.03	4.630	1.550	4.99	8.21	0.27	2.13	6.22	21.82	2.13	2.30
South & North Ala††	189	38	110,627	2,911	29.45	.....	17.09	3.90	14.41	4.460	1.590	4.91	6.76	0.31	0.88	5.76	18.62	1.92	2.50
Mobile & Montgomery††	180	25	63,675	2,547	32.58	.....	15.38	4.40	12.26	4.330	1.850	7.91	8.91	0.32	1.30	7.42	25.86	2.96	2.50
St. Louis Div.††	207	27	71,631	2,630	34.81	.....	16.28	3.27	10.16	3.770	2.020	5.02	4.61	0.30	1.66	5.64	17.23	1.56	1.56
Ev., Hen. & Nash. Div.††	135	34	78,494	2,297	23.90	.....	16.46	3.11	12.3	4.620	1.770	7.85	5.7	0.28	1.97	6.52	22.15	1.36	1.75
New Orleans Div.††	141	29	63,489	2,189	70.39	21.00	16.0	4.60	19.22	3.300	1.120	6.16	6.47	0.31	1.18	6.73	21.85	1.30	1.40
Pensacola & Selma Divs.††	134	10	21,33	2,133	17.43	44.42	21.76	.....	8.56	.....	2.230	1.43	5.78	0.36	1.52	6.34	15.33	2.25	1.68
Marquette, Hough. & Ont.	93	....	15,514	510	38.48	.....	27.25	.....	23.00	.....	.....	3.0	11.74	0.43	.....	5.89	20.86	4.50	.....
N. Y., Pa. & O., Eastern Div	228	89	263,392	2,959	29.00	.....	13.96	5.26	18.00	.....	.....	3.31	7.57	0.66	.....	6.43	17.97	2.15	2.60
Western Div.	197	55	199,283	3,623	24.72	.....	20.54	5.90	16.20	.....	.....	4.54	8.38	0.50	.....	5.98	19.42	2.01	2.60
Mahoning Div.	131	48	141,122	2,940	34.58	.....	16.22	3.30	20.60	.....	.....	5.54	6.22	0.48	.....	5.86	18.10	2.06	2.60
No. Cent., Fl. & Can. Divs.	147	45	103,903	2,304	24.81	.....	14.2	.....	.....	.....	.....	5.10	6.81	0.58	.....	3.16	18.65	1.60	2.88
Ohio Central	210	24	65,240	2,718	32.62	.....	16.48	.....	.....	.....	.....	1.49	3.53	0.38	.....	4.33	9.73	.....	.....
Pennsylvania, New York Div.‡‡	120	127	407,359	3,208	26.46	.....	9.1	.....	.....	.....	.....	6.00	12.10	0.60	.....	.....	19.70	3.20	3.92
Amboy Div‡‡	201	45	103,619	2,303	43.01	.....	13.74	.....	.....	.....	.....	6.6	7.50	0.60	.....	.....	13.70	3.20	3.94
Belvidere Div.‡‡	80	36	79,372	2,205	27.07	.....	10.64	.....	.....	.....	.....	3.40	11.90	0.80	.....	.....	16.10	3.20	3.92
Philadelphia Div.‡‡	206	148	448,249	3,029	23.16	.....	12.56	.....	.....	.....	.....	3.30	5.40	0.70	.....	.....	9.40	1.20	2.80
Middle Div.‡‡	132	127	415,707	3,273	23.97	.....	14.37	.....	.....	.....	.....	5.90	5.2	0.60	.....	.....	11.70	1.20	2.80
Pittsburgh Div.‡‡	226	101	559,587	2,931	22.91	.....	11.0	.....	.....	.....	.....	5.30	5.30	0.70	.....	.....	11.30	1.20	2.80
Tyrone Div.‡‡	127	35	75,083	2 125	19.56	.....	16.40	.....	.....	.....	.....	3.90	6.30	0.50	.....	.....	10.7	1.20	2.80
West Penn. Div.‡‡	104	18	41,087	2,427	28.85	.....	27.47	.....	.....	.....	.....	4.00	3.90	0.30	.....	.....	8.20	1.20	2.80
Lewistown Div.‡‡	63	4	17,349	2,169	20.99	.....	16.56	.....	.....	.....	.....	2.80	5.70	0.50	.....	.....	9.00	1.20	2.90
Redford Div.‡‡	57	4	10,740	2,695	34.62	.....	28.46	.....	.....	.....	.....	1.10	3.50	0.30	.....	.....	4.90	1.20	3.50
Frederick Div.‡‡	109	10	21,209	2,121	30.43	.....	11.29	.....	.....	.....	.....	1.30	9.60	0.50	.....	.....	11.30	2.88	3.87
Pitts., Va. & Ch. Div.‡‡	42	16	29,668	1,854	36.96	.....	14.66	.....	.....	.....	.....	1.50	3.30	0.50	.....	.....	5.30	1.20	2.88
Pitts., Ft. Wayne & Chi. Eastern Div.*	371	152	520,240	3,423	35.03	.....	20.15	4.0	13.30	3.186	1.303	3.99	5.12	0.50	1.53	6.49	17.68	1.79	1.79
Western Div.*	280	120	434,050	3,617	32.43	.....	19.15	5.80	18.30	2.103	1.068	4.95	4.87	0.32	1.61	0.11	17.87	1.58	1.58
Pitts., Cin. & St. Louis. Little Miami Div.*	197	36	114,774	3,188	39.09	.....	12.77	4.59	14.52	3.293	1.226	5.09	6.88	0.45	3.92	6.00	22.34	2.63	1.50
P., C., & St. L. Div.*	247	99	337,405	3,408	25.02	.....	16.65	5.50	15.66	2.35	1.160	6.30	4.36	0.43	2.14	5.63	18.81	1.05	2.00
Wabash, St. L. & Pacific. Peoria & Iowa Div.	....	56	152,784	2,728	30.07	.....	17.83	.....	.....	.....	.....	2.56	5.24	0.44	.....	6.72	15.26	1.50	2.50
West Jersey‡‡	163	20	44,312	2,216	35.65	.....	13.33	.....	.....	.....	.....	6.00	11.30	6.60	.....	.....	17.90	4.00	9.30

* Five empty cars rated as three loaded ones.
† Switching engines allowed 6 miles per hour; helping engines, actual distance run.
‡ Switching engines allowed 6 miles per hour.
§ Fuel not estimated.
‖ Two empty cars rated as one loaded one.
¶ Switching and work-train engines allowed 6 miles per hour.
** Three empty cars rated as two loaded ones.
†† Switching engines allowed 6 miles per hour; five empty cars rated as three loaded ones.
‡‡ Engineers', firemen's and wipers' wages not included in cost.
The ton of coal is 2,000 lbs., unless otherwise noted; 25 bushels counted to the ton.